

Commonwealth of Pennsylvania  
Environmental Resources  
January 9, 1990

Subject: Source Test Review

To: Data File ✓  
CNG Transmission Corporation  
Tioga Compressor Station  
Farmington Township, Tioga County

From: John S. Pitulski *J.S.P.*  
Air Quality Program Specialist  
Division of Technical Services and Monitoring  
Bureau of Air Quality Control

Through: Chief, Source Testing and Monitoring Section *43D*

Engine Nos. 1 and 2 at CNG Corporation Tioga Compressor Station are 4200 HP natural gas fired reciprocating units manufactured by Dresser-Rand, Inc.

Scott Environmental Services was retained by CNG to conduct a series of emission compliance tests on the exhausts of both engines. The scope of the test program involved the determination of emission rates of nitrogen oxides (NOx), carbon monoxide (CO) and non-methane hydrocarbons (NMHC). The tests appear to have been conducted in accordance with all applicable test methods and are acceptable to the Department.

The following data was extracted from the test report:

Engine No. 1

	1 - B	1 - C	1 - D
Test Run Number*			
Test Date	10/17/89	10/17/89	10/17/89
NOx Emission Rate (gm/HP - hr)	2.58	2.50	2.57
CO Emission Rate (gm/HP - hr)	1.88	1.96	1.98
NMHC Emission Rate (gm/HP - hr)	0.34	0.40	0.36

Engine No. 2

	1	2	3
Test Run Number			
Test Date	10/12/89	10/12/89	10/12/89
NOx Emission Rate (gm/HP - hr)	2.80	2.48	2.62
CO Emission Rate (gm/HP - hr)	1.74	1.72	1.76
NMHC Emission Rate (gm/HP - hr)	0.53	0.29	0.29

\*Test Run 1 - A on Engine No. 1 was voided due to unacceptable zero and span drift.

Data File  
CNG Transmission Corporation  
Tioga Compressor Station  
Farmington Township, Tioga County

- 2 -

January 9, 1990

Allowable Emission Rates

Nitrogen Oxides (gm/HP - hr)	3.0
Carbon Monoxide (gm/HP - hr)	2.0
Non-Methane Hydrocarbons (gm/HP - hr)	0.5

cc: Mr. Richard L. Maxwell, Jr., Williamsport Regional Office  
Permit File #59-399-008  
EPA/RSL  
Reading File  
Doug Lesher

JSP:rjr

*Ab*  
COMMONWEALTH OF PENNSYLVANIA

December 5, 1989

SUBJECT: Stack Test Report  
CNG Transmission Corporation  
Tioga Compressor Station  
Farmington Township, Tioga County  
Plan Approval #59-399-008

TO: Rick St. Louis  
Chief, Source Testing Unit

FROM: Richard L. Maxwell, Jr.  
*RLM*  
Chief, Engineering Services  
Bureau of Air Quality Control  
Williamsport Regional Office

Enclosed is a test report for NOx, CO, methane and total hydrocarbon testing performed by Scott Environmental Technology on 10/12 and 10/17/89 on two 4200 HP natural gas-fired clean burn reciprocating engines at CNG's Tioga Compressor Station. Would you please have someone on your staff review this test report for Chapter 139 conformance, etc.

Also enclosed is a copy of my test observation memo.

RLM/skb

Enclosures

cc: File

*WPA*  
*ES*

COMMONWEALTH OF PENNSYLVANIA

October 20, 1989

SUBJECT: CNG Transmission Corporation  
Farmington Township, Tioga County  
Plan Approval #59-399-008

TO: Files

FROM: Richard L. Maxwell, Jr.  
Chief, Engineering Services  
Bureau of Air Quality Control  
Williamsport Regional Office

On 10/12/89, I observed the performance of two NOx, CO, THC and methane source tests on engine #2 at CNG's Tioga Compressor Station. On 10/13/89, I observed the performance of one NOx, CO, THC and methane source test on engine #1 at the same facility. The testing was performed by Michael Gallagher and two other individuals from Scott Environmental Services. Jon Kinney of CNG and two representatives of Dresser-Rand (the engine vendor) were also on-site for both days.

The test runs were one hour in duration. Moisture tests were being done simultaneously with the sampling and velocity traverses were being done before and after the test runs (one port before and the second port after).

Due to excessive pressure problems (35 inches of mercury) encountered at the original sampling location, the testing was occurring in the exhaust of the silencer. A 30 inch high stack extension with sampling ports 24 inches from the exit point was added to the 91 inch high, 42 inch diameter engine stack to accommodate sampling. This extension was discussed with Tom Bianca and Rick St. Louis on 9/29/89. I was also informed that straightening vanes had been added to the base of the engine stacks.

The analyzers used for the testing appeared to be the same as those used on 7/11/89 except for the THC analyzer. A Beckman 402 FID analyzer was being used for THC analysis.

Instrument calibration took place prior to the commencement of testing and in between test runs (although not with all range calibration gases). The calibration gases used are identified in attached sheets labeled "span values".

CNG personnel were monitoring various engine operating parameters (rpm, ignition timing, suction pressure, discharge pressure, etc.) throughout the tests and were additionally determining engine horsepower independently of the regular horsepower monitoring system. I also monitored these parameters (data attached).

CNG Transmission Corporation  
Farmington Township, Tioga County  
Plan Approval #59-399-308  
Page 2  
October 20, 1989

Testing was delayed on the 12th due to a false hot bearing alarm on engine #2. Once this alarm was inhibited, the first test was attempted at 12:20 p.m., but had to be interrupted due to the existence of methane values in excess of the THC values. A leak in the THC sample line was subsequently found and repaired. Test #1 was started over at 1:25 p.m. and ended at 2:25 p.m. Test #2 was started at 3:45 p.m. and ended at 4:45 p.m. The third test was performed after I left the site.

On the 13th, the first test run was attempted at approximately 10:25 a.m. but was aborted due to excessive NOx concentrations. The air/fuel ratio on engine #1 was readjusted from .50 to .52 and the "new" first test was begun at 1:43 p.m. Prior to restarting, all instruments were re-calibrated and a new (one port only) velocity traverse performed. I left the site prior to the performance of the second and third tests.

The proposed test (#1 test) span check on the 13th showed excessive drift for NOx and THC. See attached.

Other items of interest were:

- o The stack temperatures were determined to be approximately 520-530°F, well below the 700°F used in the PSD modeling.
- o The adjustment to air/fuel ratio made to engine #1 on 10/13 was claimed not to have any significant effect on fuel economy. The company was advised that the air/fuel ratio would have to permanently remain at the adjusted setting (assuming that the tests showed compliance).
- o On 10/16/89 I received a phone message from Jon Kinney that engine #1 had failed to show compliance with the NMHC emission standards and that retesting was scheduled for 10/17/89. No department personnel were in attendance.

RLM/skb

CN G - TIROGA STATION

10/2/89 - ENGLE #2

## DATA FLUKE STATION COMPOSITE

CNG - TROCA STATION  
10/12/09 - ENGINE #2

TIME	NO <sub>X</sub>	CO	THC	CH <sub>4</sub>	O <sub>2</sub>	CO <sub>2</sub>	COMMENTS
12:10	37.70	47.7%					#1 TEST STARTS
12:29	35	47					
12:43	43	45-46					TEST STOPPED - THE SAMPLE LINE LEAK
12:50							#1 TEST RESTARTED
1:25	36-37	46-47	42-43	23-24	66-67	26	
1:33	39-40	45-47					
1:43	34	47	43	23-24	66.5	25.5	
1:51	33	45					
2:05	37	47					
2:14	41	44.5					#1 TEST OVER
2:25							#2 TEST STARTS
3:45	35	47	42		66.5	25.5	
3:53	35	47					
3:57	32	47	43	24.5	67	25.5	
4:12	33	46					
4:20	30	46					
4:32	31-32	47.5					
4:41							#2 TEST OVER
4:45							
							NOTE: ALL READINGS % OF SCALE. SEE ATTACHED FOR SPAN VALUES.

CNE - 706A STATION

10/12/89

ENGINE # 2

SPAN VALUES

FOR PERIOD 12:20 - 2:25 :

NOx : 20.5% OF SCALE = 100.3 ppm NOx

42.0% " " = 230 "

52.0% " " = 300 "

CO : 15.5% OF SCALE = 59.8 ppm CO

25.5% " " = 101 "

95.0% " " = 504 "

THC : 27% OF SCALE = 501.7 ppm <sup>THC(gas)</sup><sub>METHANE</sub>)

48.5% " " = 1004 "

93.5% " " = 2010 "

CH<sub>4</sub> : 15.5% OF SCALE = 501.7 ppm City

27% " " = 1004 "

55.5% " " = 2010 "

O<sub>2</sub> : 31% OF SCALE = 6% O<sub>2</sub>

56% " " = 12% "

89.5% " " = 20.8% "

CO<sub>2</sub> : 36.5% OF SCALE = 5% CO<sub>2</sub>

65.5% " " = 10% "

96% " " = 15% "

## CNG - TIoga STATION

10/12/89

ENGINE 2

## SPAN VALUES

FOR PERIOD 3:45 - 4:45 :

NO<sub>x</sub> : 17.5% OF SCALE = 100.3 ppm NO<sub>x</sub> (CHECKED)  
 38.0% " " = 230 " (CHECKED)  
 48.0% " " = 300 " (CHECKED)

CO : 45.5% OF SCALE = 59.8 ppm CO (ASSUMED)  
 25% " " = 101 " (CHECKED)  
 95.0% " " = 504 " (ASSUMED)

THC : 27% OF SCALE = 501.7 ppm THC AS METHANE (ASSUMED)  
 49.0% " " = 1004 " (CHECKED)  
 93.5% " " = 2010 " (ASSUMED)

CH<sub>4</sub> : 15.5% OF SCALE = 501.7 CH<sub>4</sub> (ASSUMED)  
 27% " " = 1004 " (CHECKED)  
 55.5% " " = 2010 " (ASSUMED)

O<sub>2</sub> : 31% OF SCALE = 6% O<sub>2</sub> (ASSUMED)  
 56.5% " " = 12% " (CHECKED)  
 89.5% " " = 20.8% " (ASSUMED)

CO<sub>2</sub> : 36.5% OF SCALE = 5% CO<sub>2</sub> (ASSUMED)  
 66% " " = 10% " (CHECKED)  
 96% " " = 15% " (ASSUMED)

CNG - TIGGA STATION

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10/13/89 - ENGINE #1

CN&G - TIGGA STATION

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DATA FROM PART BCE

## CNG - Tioga Station

10/13/39 - ENGINE #1

## COMMENTS

TIME	NOX	CO	THC	CH4	O2	CO2
11:13	61-62	43-44				
11:25	60	43-45				
11:30	65-70	43-44				
11:39	62-69	44-45				
11:53	64-70	44-45				
1:43	45	50	42		67.5	24.5
1:52	45	50			67.5	24.5
1:59	34.5	51	42	27-28	67.5	24.5
2:11	42	50.5				
2:21	47	50				
2:30	44	49				
2:39	41	50.5	42		68.5	24.5
2:43					#1 FIRST OVER	

NOTE: ALL READINGS % OF SCALE SEE ATTACHMENT  
FOR SPAN VALUES

## CNG - TIoga STATION

10/13/89

ENGINE #1

SPAN VALUES

FOR PERIOD 11:13 - 11:53 :NO<sub>x</sub> : 2.5% OF SCALE = 022% " = 100.3 ppm NO<sub>x</sub>

44% " = 230 "

55% " = 300 "

CO : 1.5% OF SCALE = 0

16% " = 59.8 ppm CO

26% " = 101 "

96% " = 504 "

THC : 5% OF SCALE = 0

2.25% " = 501.7 ppm THC AS METHANE

51.5% " = 1004 "

CH<sub>4</sub> : 2% OF SCALE = 015.5% " = 501.7 ppm CH<sub>4</sub>

28.5% " = 1004

O<sub>2</sub> : 4% OF SCALE = 031.5% " = 6% O<sub>2</sub>

56.5% " = 12% "

90.5% " = 20.8% "

CO<sub>2</sub> : 4.5% OF SCALE = 035% " = 5% CO<sub>2</sub>

64% " = 10% "

95% " = 14.1% "

## CNG - TIOGA STATION

10/13/89

ENGINE #1

SPAN VALUES

FOR PERIOD 1:43 - 2:43 :

NO<sub>x</sub>: 24% OF SCALE = 100.3 ppm NO<sub>x</sub> (CHECKED)

49.5% " = 230 " (CHECKED)

62.5% " = 300 " (CHECKED)

CO : 16% OF SCALE = 59.8 ppm CO (CHECKED)

25.5% " = 101 " (CHECKED)

THC : 25% OF SCALE = 501.7 ppm THC AS METHANE (CHECKED)

45% " = 1004 " (CHECKED)

CH<sub>4</sub> : 16% OF SCALE = 501.7 ppm CH<sub>4</sub> (CHECKED)

30% " = 1004 " (CHECKED)

O<sub>2</sub> : 56% OF SCALE = 12% O<sub>2</sub> (CHECKED)CO<sub>2</sub> : 64% OF SCALE = 10% CO<sub>2</sub> (CHECKED)

ALL OTHERS ASSUMED TO BE THE SAME

AS FOR 11/13-11/13 PERIOD.

NOTE: ABOVE VALUES ARE PRE-TEST, POST TEST SPANS  
SHOWED NO<sub>x</sub> + THC TO BE OFF:

$$\begin{array}{l} \text{NO}_x \\ \hline 22.5\% = 100.3 \\ 46\% = 230 \\ 59\% = 300 \end{array}$$

$$\begin{array}{l} \text{THC} \\ \hline 23.5\% = 501.7 \\ 41.5\% = 1004 \end{array}$$

**CNG Transmission  
Corporation**

Attn: Mr. Richard L. Maxwell  
Department of Environmental Resources  
Bureau of Air Quality Control

November 27, 1989

RECEIVED  
PA DEPARTMENT OF ENVIRONMENTAL RESOURCES

**RECEIVED**  
NOV 29 1989

**DER-AIR QUALITY CONTROL  
WILLIAMSPORT REGION**

Mr. Richard L. Maxwell  
Department of Environmental Resources  
Bureau of Air Quality Control  
200 Pine Street  
Williamsport, PA 17701

RE: Tioga Station Emission Test

Dear Mr. Maxwell:

Enclosed is a report on the compliance emission test performed at CNG's Tioga Station. Thanks for your cooperation. If you have any questions, please call me at 304/623-8457.

Sincerely yours,



Jonathan A. Kinney, Engineer  
Environmental Codes and  
Standards

Enclosure

**RECEIVED**  
NOV 29 1989

SET 1314-01-1189

DER-AIR QUALITY CONTROL  
WILLIAMSPORT REGION

EMISSIONS TESTING FOR  
CNG TRANSMISSION CORPORATION  
TIoga COUNTY COMPRESSOR STATION

Prepared for:

CNG Transmission Corporation  
P.O. Box 2450  
455 West Main Street  
Clarksburg, West Virginia

November 1989

SCOTT ENVIRONMENTAL TECHNOLOGY, INC.  
Plumsteadville, Pennsylvania 18949



Scott Environmental Technology Inc.

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SET 1314-01-1189

## 1.0 INTRODUCTION

CNG Transmission Corporation operates two 4200 HP Dresser-Rand Model TCV-10 natural gas fired reciprocating engines at their Tioga County compressor station. CNG Corporation, represented by Mr. Jonathan Kinney, contracted Scott Environmental Technology, Inc. (Scott) to perform a series of tests on those engines. The purpose of the testing was to determine the emission rate to the atmosphere of nitrogen oxides ( $\text{NO}_x$ ), carbon monoxide (CO), total hydrocarbons (THC), methane ( $\text{CH}_4$ ), and nonmethane hydrocarbons (NMHC) by difference.

The testing of Engine No. 1 was performed on October 17, 1989 and Engine No. 2 was performed on October 12, 1989. The Scott crew was composed of Messrs. Michael Gallagher, Todd Breuer, and Jeff Poiron. The testing was observed by Mr. Richard Maxwell, Air Pollution Control Engineer, PA DER, and Mr. Jonathan Kinney, Engineer, CNG Transmission Corp.

A total of three (3) acceptable emission test series were performed on each engine. Section 2 of this report presents a summary of the test results. Section 3 discusses the sampling and analytical procedures used during the test program. The appendices of this report contain copies of all field data, analytical data, calculations, and equipment calibration data. Sample times were coordinated with plant personnel to ensure that the process conditions met CNG's requirements and were acceptable for testing. Process conditions and parameters were maintained by CNG and have been included in the appendices of this report.



SET 1314-01-1189

## 2.0 SUMMARY OF RESULTS

Three emission tests were conducted on Engine No. 1 and three emission tests were conducted on Engine No. 2. Each test was performed within 10% of the design capability of the engine. The operational parameters of the engine were maintained by CNG personnel and have been included in the appendices of this report.

Table 2-1 presents a summary of the various stack gas parameters measured during each test. Table 2-2 presents the average concentrations of each gas measured. Table 2-3 is a summary of the emission rates for CO, NO<sub>x</sub>, CH<sub>4</sub>, THC, and NMHC. Results are presented in grams per hour (g/hr), pounds per hour (lbs/hr), and grams per horse power hour (g/HP-HR).

Run number 1 on engine number 1 (Table 2-1) was voided due to unacceptable zero and span drift which occurred during the sample run.

Copies of all field data, strip charts, calculations, calibration data, process information, and computer generated summaries may be found in the appendices of this report.



TABLE 2-1

CNG TRANSMISSION CORPORATION, TIoga Station  
MEASURED STACK GAS PARAMETERS

Parameter		1	1	1	Test	2	2	Test
					Average			Average
Engine No.	1-A	1-B	1-C	1-D		2-1	2-2	2-3
Run No.								
Date	10/17	10/17	10/17	10/17	10/17	10/12	10/12	10/12
Gas Flow Rate (dscf/min)	16834	17156	17484	17637	17278	16654	16506	16558
(acf/min)	35386	36140	36389	37343	36314	35879	35727	35994
Stack Temp. (°F)	513	517	515	515	515	522	532	529
Oxygen (%)	15.2	15.1	15.2	15.3	15.2	15.0	14.9	14.9
Carbon Dioxide (%)	3.3	3.2	3.2	3.2	3.2	3.3	3.4	3.4
Moisture (%)	6.0	5.0	6.6	5.9	7.56	7.16	7.40	7.37



Parameter	1	2	1	2	1	2	2	2	Test	Average
Engine No.	1	1	1	1	1	2	2	2	2	2
Run No.*	1-A	1-B	1-C	1-D	Test	2-1	2-2	2-3	2-3	Average
Date	10/17	10/17	10/17	10/17	10/17	10/12	10/12	10/12	10/12	10/12
Oxygen (%)	15.19	15.13	15.23	15.30	15.22	14.93	14.92	15.03	14.96	
Carbon dioxide (%)	3.28	3.24	3.19	3.22	3.22	3.41	3.36	3.31	3.36	
Carbon monoxide (ppm)	262.30	237.01	240.25	240.46	239.24	223.06	223.77	227.81	224.88	
Nitrogen oxide (ppm)	183.18	198.00	185.91	190.71	191.54	218.76	196.56	207.11	207.48	
Total Hydrocarbons (ppm as CH <sub>4</sub> )	1009.83	965.78	1012.92	1000.45	993.05	934.58	928.22	936.22	933.01	
Methane (ppm)	923.16	891.04	926.41	924.35	913.93	816.64	862.27	869.51	849.47	

\* Run 1-A voided, unacceptable zero and span drift.  
Results not included in averages.



TABLE 2-3

CNG TRANSMISSION CORPORATION, TIOGA STATION  
EMISSION RATE SUMMARY

Parameter	1				2				Test				2				
	Engine No.	1-A	1-B	1-C	1-D	Average	1	2	2	2-1	2-2	2-3	10/12	10/12	10/12	Average	
Date	10/17	10/17	10/17	10/17	10/17	10/17	10/17	10/17	10/12	10/12	10/12	10/12	10/12	10/12	10/12	10/12	
Carbon monoxide																	
(lbs/hr)	19.5	17.7	18.3	18.2	18.2	18.2	18.2	18.2	16.2	16.1	16.5	16.5	16.5	16.5	16.5	16.5	
(g/hr)	8441	8019	8315	8395	8253	8253	8253	8253	7354	7312	7467	7378	7378	7378	7378	7378	
(g/HP-hr)	2.09	1.89	1.96	1.98	1.94	1.94	1.94	1.94	1.74	1.72	1.76	1.74	1.74	1.74	1.74	1.74	
(tons/yr)	85.4	77.5	80.2	81.0	79.6	79.6	79.6	79.6	71.0	70.5	72.3	71.4	71.4	71.4	71.4	71.4	
Nitrogen dioxide																	
(lbs/hr)	22.1	24.4	23.3	24.1	23.9	23.9	23.9	23.9	26.1	23.3	24.6	24.7	24.7	24.7	24.7	24.7	
(g/hr)	10027	11046	10570	10937	10851	10851	10851	10851	11847	10550	11151	11183	11183	11183	11183	11183	
(g/HP-hr)	2.36	2.58	2.50	2.57	2.55	2.55	2.55	2.55	2.80	2.48	2.62	2.63	2.63	2.63	2.63	2.63	
(tons/yr)	96.8	106.9	102.1	105.6	104.9	104.9	104.9	104.9	114.3	102.1	107.7	108.0	108.0	108.0	108.0	108.0	
Total Hydrocarbons																	
(lbs/hr)	42.5	41.4	44.3	44.1	43.3	43.3	43.3	43.3	38.9	38.3	38.7	38.6	38.6	38.6	38.6	38.6	
(g/hr CH <sub>4</sub> )	19271	18783	20076	20002	19620	19620	19620	19620	17644	17368	17573	17528	17528	17528	17528	17528	
Methane																	
(lbs/hr)	38.8	38.2	40.5	40.7	39.8	39.8	39.8	39.8	34.0	35.6	36.0	35.2	35.2	35.2	35.2	35.2	
(g/hr)	17617	17329	18361	18481	18057	18057	18057	18057	15417	16134	16321	15957	15957	15957	15957	15957	
Non-Methane Hydrocarbons																	
(lbs/hr)	3.65	3.20	3.78	3.35	3.44	3.44	3.44	3.44	4.91	2.72	2.76	3.46	3.46	3.46	3.46	3.46	
(g/hr)	1653.9	1453.6	1714.6	1521.5	1563.2	1563.2	1563.2	1563.2	2226.6	1234.0	1252.2	1570.9	1570.9	1570.9	1570.9	1570.9	
(g/HP-hr)	0.39	0.34	0.40	0.36	0.37	0.37	0.37	0.37	0.53	0.29	0.29	0.37	0.37	0.37	0.37	0.37	
(tons/yr)	16.0	14.0	16.6	14.7	15.1	15.1	15.1	15.1	21.5	11.9	12.1	15.2	15.2	15.2	15.2	15.2	

\* Run 1-A voided, unacceptable zero and span drift.

Results not included in averages.



SET 1314-01-1189

### 3.0 FACILITY DESCRIPTION

The compressor station consists of two 4200 HP Dresser-Rand Model TCV-10 natural gas fired reciprocating engines. The exhaust leaves each engine through a 24-inch diameter duct before exiting through a silencer and vertical exhaust stack outside the engine building. Figure 3-1 shows the sample port locations for each engine. Figure 3-2 presents the sample point locations sampled during each test. The exhaust ducting for each of the two engines was identical.

The measurement site was located in a 38.50 inch ID circular duct greater than 77 inches (2.0 duct diameters) downstream of the nearest flow disturbance and greater than 20 inches (0.5 duct diameters) upstream of the nearest flow disturbance. As required by EPA Method 1 and 2 criteria the minimum number of 16 traverse points, 8 along each of two (2) diameters.

The PA DER plan approval specifies that air contaminant emissions from each of the two engines shall not exceed the following rates:

Nitrogen oxides-----	3.0 grams/HP-HR
Carbon monoxide-----	2.0 grams/HP-HR
Non-Methane hydrocarbons----	0.5 grams/HP-HR

The combined air contaminant emission from the two Dresser-Rand TCV-10 engines, the Sivalls indirect-fired gas heater, the Natco indirect-fired regenerative gas heater, and the natural gas-fired boiler shall not exceed the following rates:

Nitrogen oxides-----	262.1 tons/year
Carbon monoxide-----	162.2 tons/year
Non-Methane hydrocarbons---	40.6 tons/year



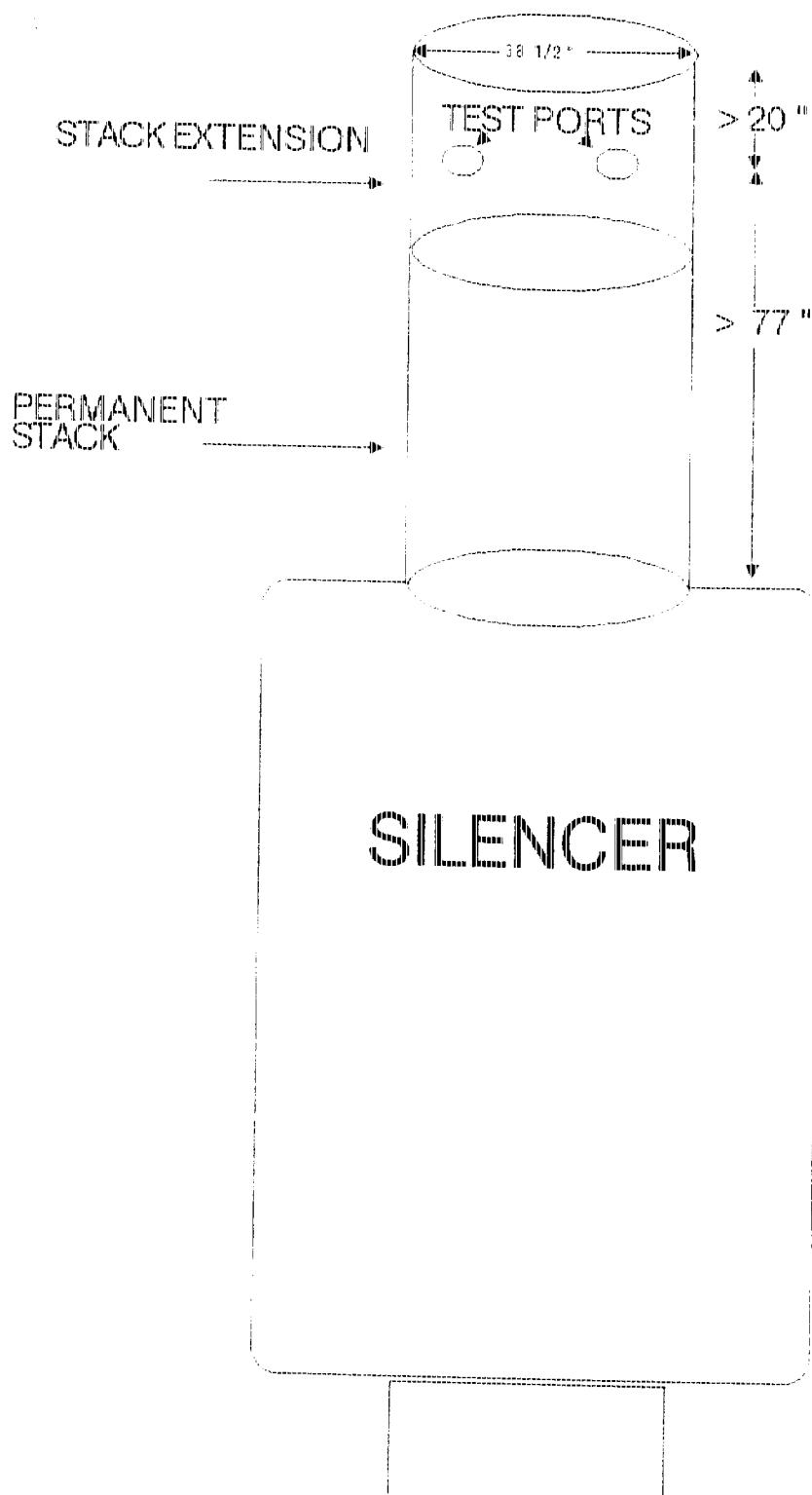
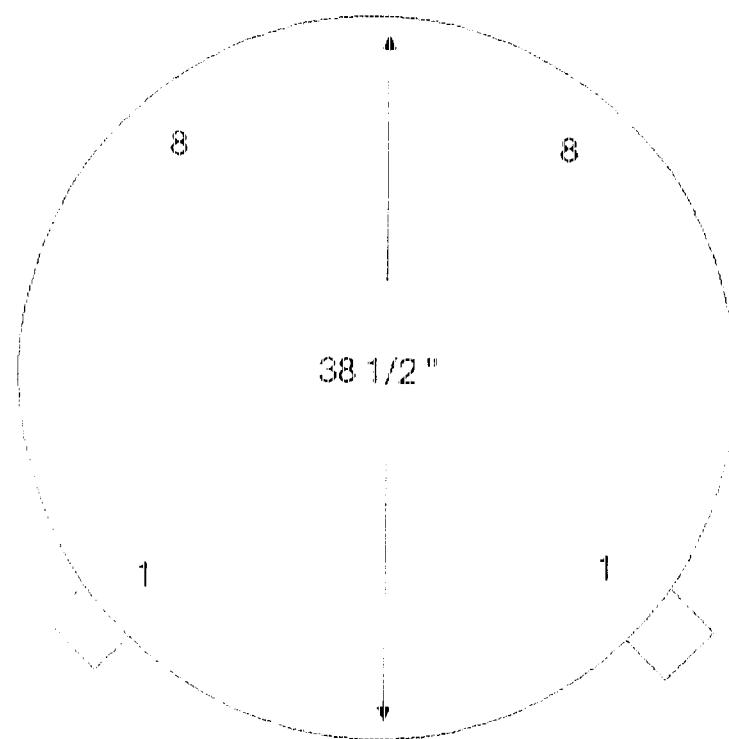


FIGURE 3—1 SAMPLE PORT LOCATION



Traverse Point Number	Point Location (inches from outside wall)
1	12.5 + 3.25 = 2.98
2	12.5 - 4.5 + 1 = 5.79
3	12.5 - 7.5 = 9.22
4	12.5 + 4 = 14.19
5	12.5 - 4 = 27.82
6	12.5 - 9 = 32.78
7	12.5 - 14 = 36.21
8	12.5 - 17 = 39.02

FIGURE 3 – 2 SAMPLE POINT LOCATION

SET 1314-01-1189

#### 4.0 SAMPLING AND ANALYTICAL PROCEDURES

The primary objective of the test program was to evaluate the two engines emissions to the atmosphere. The procedures employed for testing were as defined in EPA Reference Methods 1, 2, 3A, 4, 7E, 10, 18, and 25A. A stainless steel probe was inserted into the stack. The probe was equipped with a three-way valve out of the stack. The valve permitted directing either the stack gas or zero/span gases through the heated teflon sample line to the instrument's manifold.

All analyzers were located in the Scott mobile laboratory which was brought to the site. The laboratory provided a clean environment for the analyzers. The stack gas was analyzed for velocity,  $O_2$ ,  $CO_2$ ,  $NO_x$ , CO,  $CH_4$ , and NMHC (by difference). A brief description of the analytical methods used follows.

Nondispersive infrared spectroscopy was used for CO and  $CO_2$ . Each of these gases absorbs infrared radiation of a characteristic wavelength. The absorption is proportional to the concentration of the pollutant. Oxides of nitrogen were measured by chemiluminescence where the characteristic light emitted by the gas phase reaction of NO with ozone and resulting decay of excited  $NO_2$  is measured. Total hydrocarbons were measured using a flame ionization detector burning sample gas in a hydrogen flame and measuring the electron flow resulting from the ionization of oxidizing C to  $CO_2$  in the flame.  $CH_4$  was measured using a gas chromatograph with a flame ionization detector.

Each analyzer was given a multipoint calibration prior to the test using zero and three span gases to establish instrument linearity. Following the tests, instrument zero and span checks were established with a single gas. The span was selected to be representative of concentrations observed in the stack.

The procedures employed to determine stack gas moisture content were consistent with those specified by EPA Reference Method 4. Stack gas



SET 1314-01-1189

velocity was measured with an S-type pitot tube equipped with a type K thermocouple for determining flue gas temperature. Velocity head pressure was measured using an inclined manometer having a full range of 0 to 10 inches H<sub>2</sub>O. Velocity measurements were made concurrent with each moisture and pollutant determination.



APPENDIX A

ENGINE NO. 1 FIELD DATA



Project Number

## Estimates for K-Factor Determination

Test Number

RAC 3

Plant C NO (2) Thread Sealant

Date 10-17-89

Sample Location Engine #1 - Stack

Run Number 1-A

Operators M-A. Gallagher

Ambient Temperature

Barometer 27.97

Static Pressure -0.65/-0.61

Pitot Factor 0.84

Initial

Final

Inches HG 14.5

Leak Rate < 0.024 ~~0.021~~

Inches HG

Sampling Time 1044

Init. Gas Meter Reading 356.3

Velt. Press. 0.94

Orif. Press. 0.50

In 51/2

Out 51/3

Stack Temp. 47

Meter Temp. 10

Pump Temp.

Impinger

Temp.

Temp.

Vacuum

Temp.

Meter Box Number

Probe Heater Setting A/A

Filter Heater Setting A/A

Total mln H<sub>2</sub> 26.0

Gauge Scale Sel 4.0

g O<sub>2</sub> /5.19g CO<sub>2</sub> 2.20

Nozzle ID A/A

Start Time 1044

End Time 1044

Date 10/17/89

Run No. 1044

Start Time 1044

End Time 1044

Date 10/17/89

Run No. 1044

Start Time 1044

End Time 1044

Date 10/17/89

Run No. 1044

Start Time 1044

End Time 1044

Date 10/17/89

Run No. 1044

Start Time 1044

End Time 1044

Date 10/17/89

Run No. 1044

Start Time 1044

End Time 1044

Date 10/17/89

Run No. 1044

Start Time 1044

End Time 1044

Date 10/17/89

Run No. 1044

Start Time 1044

End Time 1044

Date 10/17/89

Run No. 1044

Start Time 1044

End Time 1044

Date 10/17/89

Run No. 1044

Start Time 1044

End Time 1044

Date 10/17/89

Run No. 1044

Start Time 1044

End Time 1044



## Project Number

## Estimates for K-Factor Determination

## Test Number

RAC 2

 $P_g = 14.7$  $\rho_{CO_2} = 0.004$  $\rho_{NO_2} = 0.004$  $\rho_{O_2} = 0.004$  $\rho_{N_2} = 0.004$  $\rho_{Ar} = 0.004$  $\rho_{He} = 0.004$  $\rho_{Ne} = 0.004$  $\rho_{Kr} = 0.004$  $\rho_{Xe} = 0.004$  $\rho_{CH_4} = 0.004$  $\rho_{C_2H_6} = 0.004$  $\rho_{C_3H_8} = 0.004$  $\rho_{C_4H_10} = 0.004$  $\rho_{C_6H_6} = 0.004$  $\rho_{C_2H_2} = 0.004$  $\rho_{C_3H_4} = 0.004$  $\rho_{C_5H_8} = 0.004$  $\rho_{C_7H_16} = 0.004$  $\rho_{C_9H_20} = 0.004$  $\rho_{C_{11}H_{22}} = 0.004$  $\rho_{C_{13}H_{26}} = 0.004$  $\rho_{C_{15}H_{32}} = 0.004$  $\rho_{C_{17}H_{34}} = 0.004$  $\rho_{C_{19}H_{38}} = 0.004$  $\rho_{C_{21}H_{42}} = 0.004$  $\rho_{C_{23}H_{46}} = 0.004$  $\rho_{C_{25}H_{50}} = 0.004$  $\rho_{C_{27}H_{54}} = 0.004$  $\rho_{C_{29}H_{58}} = 0.004$  $\rho_{C_{31}H_{62}} = 0.004$  $\rho_{C_{33}H_{66}} = 0.004$  $\rho_{C_{35}H_{70}} = 0.004$  $\rho_{C_{37}H_{74}} = 0.004$  $\rho_{C_{39}H_{78}} = 0.004$  $\rho_{C_{41}H_{82}} = 0.004$  $\rho_{C_{43}H_{86}} = 0.004$  $\rho_{C_{45}H_{90}} = 0.004$  $\rho_{C_{47}H_{94}} = 0.004$  $\rho_{C_{49}H_{98}} = 0.004$  $\rho_{C_{51}H_{102}} = 0.004$  $\rho_{C_{53}H_{106}} = 0.004$  $\rho_{C_{55}H_{110}} = 0.004$  $\rho_{C_{57}H_{114}} = 0.004$  $\rho_{C_{59}H_{118}} = 0.004$  $\rho_{C_{61}H_{122}} = 0.004$  $\rho_{C_{63}H_{126}} = 0.004$  $\rho_{C_{65}H_{130}} = 0.004$  $\rho_{C_{67}H_{134}} = 0.004$  $\rho_{C_{69}H_{138}} = 0.004$  $\rho_{C_{71}H_{142}} = 0.004$  $\rho_{C_{73}H_{146}} = 0.004$  $\rho_{C_{75}H_{150}} = 0.004$  $\rho_{C_{77}H_{154}} = 0.004$  $\rho_{C_{79}H_{158}} = 0.004$  $\rho_{C_{81}H_{162}} = 0.004$  $\rho_{C_{83}H_{166}} = 0.004$  $\rho_{C_{85}H_{170}} = 0.004$  $\rho_{C_{87}H_{174}} = 0.004$  $\rho_{C_{89}H_{178}} = 0.004$  $\rho_{C_{91}H_{182}} = 0.004$  $\rho_{C_{93}H_{186}} = 0.004$  $\rho_{C_{95}H_{190}} = 0.004$  $\rho_{C_{97}H_{194}} = 0.004$  $\rho_{C_{99}H_{198}} = 0.004$  $\rho_{C_{101}H_{202}} = 0.004$  $\rho_{C_{103}H_{206}} = 0.004$  $\rho_{C_{105}H_{210}} = 0.004$  $\rho_{C_{107}H_{214}} = 0.004$  $\rho_{C_{109}H_{218}} = 0.004$  $\rho_{C_{111}H_{222}} = 0.004$  $\rho_{C_{113}H_{226}} = 0.004$  $\rho_{C_{115}H_{230}} = 0.004$  $\rho_{C_{117}H_{234}} = 0.004$  $\rho_{C_{119}H_{238}} = 0.004$  $\rho_{C_{121}H_{242}} = 0.004$  $\rho_{C_{123}H_{246}} = 0.004$  $\rho_{C_{125}H_{250}} = 0.004$  $\rho_{C_{127}H_{254}} = 0.004$  $\rho_{C_{129}H_{258}} = 0.004$  $\rho_{C_{131}H_{262}} = 0.004$  $\rho_{C_{133}H_{266}} = 0.004$  $\rho_{C_{135}H_{270}} = 0.004$  $\rho_{C_{137}H_{274}} = 0.004$  $\rho_{C_{139}H_{278}} = 0.004$  $\rho_{C_{141}H_{282}} = 0.004$  $\rho_{C_{143}H_{286}} = 0.004$  $\rho_{C_{145}H_{290}} = 0.004$  $\rho_{C_{147}H_{294}} = 0.004$  $\rho_{C_{149}H_{298}} = 0.004$  $\rho_{C_{151}H_{302}} = 0.004$  $\rho_{C_{153}H_{306}} = 0.004$  $\rho_{C_{155}H_{310}} = 0.004$  $\rho_{C_{157}H_{314}} = 0.004$  $\rho_{C_{159}H_{318}} = 0.004$  $\rho_{C_{161}H_{322}} = 0.004$  $\rho_{C_{163}H_{326}} = 0.004$  $\rho_{C_{165}H_{330}} = 0.004$  $\rho_{C_{167}H_{334}} = 0.004$  $\rho_{C_{169}H_{338}} = 0.004$  $\rho_{C_{171}H_{342}} = 0.004$  $\rho_{C_{173}H_{346}} = 0.004$  $\rho_{C_{175}H_{350}} = 0.004$  $\rho_{C_{177}H_{354}} = 0.004$  $\rho_{C_{179}H_{358}} = 0.004$  $\rho_{C_{181}H_{362}} = 0.004$  $\rho_{C_{183}H_{366}} = 0.004$  $\rho_{C_{185}H_{370}} = 0.004$  $\rho_{C_{187}H_{374}} = 0.004$  $\rho_{C_{189}H_{378}} = 0.004$  $\rho_{C_{191}H_{382}} = 0.004$  $\rho_{C_{193}H_{386}} = 0.004$  $\rho_{C_{195}H_{390}} = 0.004$  $\rho_{C_{197}H_{394}} = 0.004$  $\rho_{C_{199}H_{398}} = 0.004$  $\rho_{C_{201}H_{402}} = 0.004$  $\rho_{C_{203}H_{406}} = 0.004$  $\rho_{C_{205}H_{410}} = 0.004$  $\rho_{C_{207}H_{414}} = 0.004$  $\rho_{C_{209}H_{418}} = 0.004$  $\rho_{C_{211}H_{422}} = 0.004$  $\rho_{C_{213}H_{426}} = 0.004$  $\rho_{C_{215}H_{430}} = 0.004$  $\rho_{C_{217}H_{434}} = 0.004$  $\rho_{C_{219}H_{438}} = 0.004$  $\rho_{C_{221}H_{442}} = 0.004$  $\rho_{C_{223}H_{446}} = 0.004$  $\rho_{C_{225}H_{450}} = 0.004$  $\rho_{C_{227}H_{454}} = 0.004$  $\rho_{C_{229}H_{458}} = 0.004$  $\rho_{C_{231}H_{462}} = 0.004$  $\rho_{C_{233}H_{466}} = 0.004$  $\rho_{C_{235}H_{470}} = 0.004$  $\rho_{C_{237}H_{474}} = 0.004$  $\rho_{C_{239}H_{478}} = 0.004$  $\rho_{C_{241}H_{482}} = 0.004$  $\rho_{C_{243}H_{486}} = 0.004$  $\rho_{C_{245}H_{490}} = 0.004$  $\rho_{C_{247}H_{494}} = 0.004$  $\rho_{C_{249}H_{498}} = 0.004$  $\rho_{C_{251}H_{502}} = 0.004$  $\rho_{C_{253}H_{506}} = 0.004$  $\rho_{C_{255}H_{510}} = 0.004$  $\rho_{C_{257}H_{514}} = 0.004$  $\rho_{C_{259}H_{518}} = 0.004$  $\rho_{C_{261}H_{522}} = 0.004$  $\rho_{C_{263}H_{526}} = 0.004$  $\rho_{C_{265}H_{530}} = 0.004$  $\rho_{C_{267}H_{534}} = 0.004$  $\rho_{C_{269}H_{538}} = 0.004$  $\rho_{C_{271}H_{542}} = 0.004$  $\rho_{C_{273}H_{546}} = 0.004$  $\rho_{C_{275}H_{550}} = 0.004$  $\rho_{C_{277}H_{554}} = 0.004$  $\rho_{C_{279}H_{558}} = 0.004$  $\rho_{C_{281}H_{562}} = 0.004$  $\rho_{C_{283}H_{566}} = 0.004$  $\rho_{C_{285}H_{570}} = 0.004$  $\rho_{C_{287}H_{574}} = 0.004$  $\rho_{C_{289}H_{578}} = 0.004$  $\rho_{C_{291}H_{582}} = 0.004$  $\rho_{C_{293}H_{586}} = 0.004$  $\rho_{C_{295}H_{590}} = 0.004$  $\rho_{C_{297}H_{594}} = 0.004$  $\rho_{C_{299}H_{598}} = 0.004$  $\rho_{C_{301}H_{602}} = 0.004$  $\rho_{C_{303}H_{606}} = 0.004$  $\rho_{C_{305}H_{610}} = 0.004$  $\rho_{C_{307}H_{614}} = 0.004$  $\rho_{C_{309}H_{618}} = 0.004$  $\rho_{C_{311}H_{622}} = 0.004$  $\rho_{C_{313}H_{626}} = 0.004$  $\rho_{C_{315}H_{630}} = 0.004$  $\rho_{C_{317}H_{634}} = 0.004$  $\rho_{C_{319}H_{638}} = 0.004$  $\rho_{C_{321}H_{642}} = 0.004$  $\rho_{C_{323}H_{646}} = 0.004$  $\rho_{C_{325}H_{650}} = 0.004$  $\rho_{C_{327}H_{654}} = 0.004$  $\rho_{C_{329}H_{658}} = 0.004$  $\rho_{C_{331}H_{662}} = 0.004$  $\rho_{C_{333}H_{666}} = 0.004$  $\rho_{C_{335}H_{670}} = 0.004$  $\rho_{C_{337}H_{674}} = 0.004$  $\rho_{C_{339}H_{678}} = 0.004$  $\rho_{C_{341}H_{682}} = 0.004$  $\rho_{C_{343}H_{686}} = 0.004$  $\rho_{C_{345}H_{690}} = 0.004$  $\rho_{C_{347}H_{694}} = 0.004$  $\rho_{C_{349}H_{698}} = 0.004$  $\rho_{C_{351}H_{702}} = 0.004$  $\rho_{C_{353}H_{706}} = 0.004$  $\rho_{C_{355}H_{710}} = 0.004$  $\rho_{C_{357}H_{714}} = 0.004$  $\rho_{C_{359}H_{718}} = 0.004$  $\rho_{C_{361}H_{722}} = 0.004$  $\rho_{C_{363}H_{726}} = 0.004$  $\rho_{C_{365}H_{730}} = 0.004$  $\rho_{C_{367}H_{734}} = 0.004$  $\rho_{C_{369}H_{738}} = 0.004$  $\rho_{C_{371}H_{742}} = 0.004$  $\rho_{C_{373}H_{746}} = 0.004$  $\rho_{C_{375}H_{750}} = 0.004$  $\rho_{C_{377}H_{754}} = 0.004$  $\rho_{C_{379}H_{758}} = 0.004$  $\rho_{C_{381}H_{762}} = 0.004$  $\rho_{C_{383}H_{766}} = 0.004$  $\rho_{C_{385}H_{770}} = 0.004$  $\rho_{C_{387}H_{774}} = 0.004$  $\rho_{C_{389}H_{778}} = 0.004$  $\rho_{C_{391}H_{782}} = 0.004$  $\rho_{C_{393}H_{786}} = 0.004$  $\rho_{C_{395}H_{790}} = 0.004$  $\rho_{C_{397}H_{794}} = 0.004$  $\rho_{C_{399}H_{798}} = 0.004$  $\rho_{C_{401}H_{802}} = 0.004$  $\rho_{C_{403}H_{806}} = 0.004$  $\rho_{C_{405}H_{810}} = 0.004$  $\rho_{C_{407}H_{814}} = 0.004$  $\rho_{C_{409}H_{818}} = 0.004$  $\rho_{C_{41$

Project Number	Estimates for K-Factor Determination									
Plant	Gas Station	P <sub>s</sub>	P <sub>o</sub>	Heter Box Number	Test Number - AAC3					
Date	10-17-97	10 <sub>2</sub>	-	Probe Heater Setting	A/A					
Sample Location	Engine #1 - Stack	100 <sub>2</sub>	-	Filter Heater Setting	N/A					
Run Number	#1-CJ	T <sub>s</sub>	-	Total m <sub>1</sub> H <sub>2</sub> O	22.0					
Operator	M.D. Gehringer	T <sub>s</sub>	-	grams Starch Gel	2.3					
Ambient Temperature	57.4 °C	Y <sub>HS</sub>	-	Z <sub>CO<sub>2</sub></sub>	13.16 (5.13)					
Barometer	29.97	Y <sub>d</sub>	-	Z <sub>CO<sub>2</sub></sub>	3.20 (3.19)					
Static Pressure	-0.39/-0.32	due	-	Nozzle ID	0.0417 μA					
Pitot Factor	1.04	Stock ID	36.5	Start Time	150.9					
		K	-	Finish Time	160.9					

Traverse	Sampling	Gas Meter Reading	Vel. Press.	Orif. Press.	Stack Temp.	Heter Temp.	Pump	Impinger	Temp.	Temp.
Point	Time	Init. 100% 25°C	in	in	T <sub>s</sub>	T <sub>g</sub>	In	out		
A-1	01509	107.4	1.00	0.50	512	51	51	51		
2	10.159	-	1.05	0.50	515	63	54	54		
3	20.1529	416.3	1.05	0.50	510	70	57	57		
4	30.1539	416.3	1.05	0.50	517	71	59	59		
5	40.1549	420.0	1.00	0.50	516	72	56	56		
6	50.1559	423.9	0.46	0.50	515	72	56	56		
7	60.1609	426.415	0.86	0.50	510	-	-	-		
8	-	-	0.62	-	-	-	-	-		
9	-	-	0.20	-	513	-	-	-		
10	-	-	0.26	-	515	-	-	-		
11	-	-	0.44	-	517	-	-	-		
12	-	-	0.45	-	518	-	-	-		
13	-	-	0.42	-	518	-	-	-		
14	-	-	0.39	-	517	-	-	-		
15	-	-	0.25	-	517	-	-	-		
16	-	-	0.52	-	516	-	-	-		
17	-	-	0.51	-	516	-	-	-		
18	-	-	0.52	-	516	-	-	-		
Total	-	-	-	-	-	-	-	-		
Average	-	-	-	-	-	-	-	-		

FORM-39 5/99

Project Number

Plant C CO<sub>2</sub> Trickle Strainer

Date 10-17-93

Sample Location Engine #1 - Stack

Run Number 1 - D

Operator A.A. Gullaglo

Ambient Temperature

Barometer 29.97

Static Pressure -0.321 -0.70

Pitot Factor 0.84

Traverse

Flow

Inches 16

Leak Rate 0.002 - 0.002

Sampling

Gas Meter Reading

Init. 430.144

dp

0.672

1.00

0.50

0.50

0.50

0.50

0.50

0.50

0.50

0.50

0.50

0.50

0.50

0.50

0.50

0.50

0.50

0.50

0.50

0.50

## Estimates for K-Factor Determination

P<sub>g</sub>CO<sub>2</sub>CO<sub>2</sub>T<sub>s</sub>T<sub>a</sub>

HS

Y<sub>d</sub>dH<sub>2</sub>

Stack ID 385"

K = 10A

Inches 17

Leak Rate

Sampling

Gas Meter Reading

Init. 430.144

dp

0.672

1.00

0.50

0.50

0.50

0.50

0.50

0.50

0.50

0.50

0.50

0.50

0.50

0.50

0.50

0.50

0.50

0.50

0.50

0.50

0.50

0.50

## Test Number

Meter Box Number C-A-C-3

Probe Heater Setting N/A

Filter Heater Setting N/A

Total ml H<sub>2</sub>O

Grease Surface Gel

Y<sub>O<sub>2</sub></sub>Y<sub>CO<sub>2</sub></sub>Z<sub>CO<sub>2</sub></sub>

Nozzle ID N/A

Start Time 1643

Finish Time

HP = 4250

Sampling

Vol. Press.

Orif. Press.

Stack Temp.

T<sub>s</sub>T<sub>a</sub>T<sub>in</sub>T<sub>out</sub>T<sub>stack</sub>T<sub>in</sub>T<sub>out</sub>T<sub>stack</sub>T<sub>in</sub>T<sub>out</sub>T<sub>stack</sub>T<sub>in</sub>T<sub>out</sub>T<sub>stack</sub>T<sub>in</sub>T<sub>out</sub>T<sub>stack</sub>T<sub>in</sub>T<sub>out</sub>T<sub>stack</sub>T<sub>in</sub>T<sub>out</sub>

Page 1 of



Scott Environmental Technology Inc.

## SAMPLE RECOVERY DATA

Plant: ENGR. TECNA. STATIONDate: 10-17-89Sampling Location: Engre. Pl. Outfall StackSample Type: Moisture (EPA Method 4)

Run Number:

Sample Box Number:

Clean-up Man: John D. Gallagher

Job Number:

Comments:

FRONT HALFFilter Number: N/A

Description of Filter:

MOISTURE

	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
Impingers				
Final Volume:	<u>226.0</u>	<u>228.0</u>	<u>223.0</u>	<u>228</u> ml
Initial Volume:	<u>200.0</u>	<u>200.0</u>	<u>200.0</u>	<u>200.0</u> ml
Net Volume:	<u>26.0</u>	<u>28.0</u>	<u>23.0</u>	<u>28</u> ml
Total H <sub>2</sub> O:				

Silica Gel

Final Volume:	<u>462.8</u>	<u>468.6</u>	<u>463.2</u>	<u>471.3</u> g
Initial Volume:	<u>467.2</u>	<u>458.2</u>	<u>469.9</u>	<u>463.2</u> g
Net Volume:	<u>7.6</u>	<u>10.4</u>	<u>3.3</u>	<u>-8.1</u> g
Total Moisture:	<u>30.6</u>	<u>34.8</u>	<u>36.3</u>	<u>36.1</u>

Description of Impinger Catch:



$O_2$ 

## CONTINUOUS ANALYZER DAILY DATA

Plant: CNG - T106A Run: Unit 1 Run A  
 Date: 10-17-89 Pollutant:  
 Operator: Sample Size:  
 Strip Chart Analyzer Serial No.:  
 Recorder Type: Analyze Model:  
 Inst. Span Range: Output Signal Format:  
 $O_2$  Span Gas Conc.: 0 0 0 0  
 Meter/Recorder Reading: 1 28.5 53 36  
 A 2 33.5 36  
 B 2 63.5 36  
 C 2 63.5 36  
 0 2 53.5

## CALIBRATION (SCALE FACTOR/LINEAR REGRESSION, ETC.)

Time HR:MIN	Chart Reading	Scale Factor	% ppm	Time HR:MIN	Chart Reading	Scale Factor	% ppm
1045	64.5			1100	64.5		
1050	64.5			1101	64.5		
1055	64.5			1109	64.5		
1102	64.5			1114	64.5		
1105	64.5			1114	64.5		
1116	64.5			1124	64.5		
1115	64.5			1127	64.5		
1120	64.5			1131	64.5		
1125	64.5			1139	64.5		
1130	64.5			1139	64.5		
1135	64.5			1144	64.5		
1140	64.5			1154	64.5		
1145	64.5			1158	64.5		
				1159	65		
				1209	65	64.58	1218
<hr/>							
B	1318	64		1300			
	1317	64		1303			
	1322	64		1308	65		
	1327	64		1303	65		
	1332	64		1309	65		
	1337	64.5		1313	65		
	1342	64.5		1318	65		
	1347	64.5		1323	65		
	1352	64.5		1328	65		
	1357	64.5		1333	65		
	1402	64.5		1338	65		
	1407	64.5		1343	65		
	1412	64.5	64.3	1348	65		
				1353	65		
				1358	65		1328

C<sub>60</sub>C<sub>70</sub>

CONTINUOUS ANALYZER DAILY DATA

Plant: CNG - TIGGA Run: Met 31 Run A  
 Date: 10-11-89 Pollutant:  
 Operator: Sample Size:  
 Strip Chart Analyzer Serial No.:  
 Recorder Type: Analyze Model:  
 Inst. Span Range: Output Signal Format:  
 CO<sub>2</sub> Span Gas Conc.: 100% 10% 10% 10%  
 Meter/Recorder Reading: 4 36.5 64 91  
 4 34.3 60 84

CALIBRATION (SCALE FACTOR/LINEAR REGRESSION, ETC.)

Time HR:MIN	Chart Reading	Scale Factor	ppm	Time HR:MIN	Chart Reading	Scale Factor	% DEVI.
12:45	23			12:45	23		
12:50	23			12:50	23		
12:55	23.5			12:55	23.5		
1:00	23.5			1:00	23		
1:05	23			1:05	23		
1:10	23			1:10	23.5		
1:15	23			1:15	23.5		
1:20	23.5			1:20	23.5		
1:25	23.5			1:25	23.5		
1:30	23.5			1:30	23.5		
1:35	23.5			1:35	23.5		
1:40	23.5			1:40	23.5		
1:45	23.5			1:45	23.5		
					16:09	22.5	22.58 3.80
13:10	23			Run 1)			
13:11	23						
13:12	23				16:56	23	
13:17	23				17:03	23	
13:21	22.5				17:08	23	
13:27	22.5				17:13	23	
13:42	22.5				17:18	23	
13:47	22.5				17:23	23	
13:52	23.5				17:28	22.5	
13:57	22.5				17:33	22.5	
14:02	22.5				17:38	22.5	
14:07	22.5				17:43	22.5	
14:12	22.5	22.7	3.2		17:48	22.5	
					17:53	22.5	
					17:58	22.5	22.73 3.22

CONTINUOUS ANALYZER DAILY DATA

Plant: CNG - Tigard Run: Unit 1 (A)  
 Date: 10-17-89 Pollutant:  
 Operator: Sample Size:  
 Strip Chart Analyzer Serial No.:  
 Recorder Type: Analyze Model:  
 Inst. Span Range: Output Signal Format:  
 CO Span Gas Conc.: 25.78 101 504  
 Meter/Recorder Reading: 25.78 101 504

CALIBRATION (SCALE FACTOR/LINEAR REGRESSION, ETC.)

## CONTINUOUS ANALYZER DAILY DATA

Plant: CNG - T1663 Run: \_\_\_\_\_  
 Date: 10/11/89 Pollutant: \_\_\_\_\_  
 Operator: Sample Size: \_\_\_\_\_  
 Strip Chart Analyzer Serial No.: \_\_\_\_\_  
 Recorder Type: Analyze Model: \_\_\_\_\_  
 Inst. Span Range: Output Signal Format: \_\_\_\_\_  
 No. Span Gas Conc.: 100.0 130 300  
 Meter/Recorder Reading: 2 99.34 141.5 95.5  
 A 1.5 67.5 40.0 16  
 B 2.0 96.0 39.25 100  
 C 2.0 39.25 83.0 100

## CALIBRATION (SCALE FACTOR/LINEAR REGRESSION, ETC.)

Time HR:MIN	Chart Reading	Scale Factor	ppm	Time HR:MIN	Chart Reading	Scale Factor	ppm
1045	6.1			1045	6.1		
1050	6.1			1050	6.1		
1055	6.1			1055	6.1		
1100	6.5			1100	6.4		
1105	6.3			1105	6.4		
1110	6.1			1110	6.3		
1115	59.5			1115	6.4		
1120	6.2			1120	6.3		
1125	6.0			1125	6.3		
1130	6.0			1130	6.2		
1135	5.9			1135	6.3		
1140	5.85			1140	6.2		
1145	5.9	60.0		1145	6.2		
				1150	6.4		
				1155	6.4		
				1200	6.2		
				1205	6.2		
				1210	6.2		
				1215	6.2		
				1220	6.2		
				1225	6.3		
				1230	6.3		
				1235	6.3		
				1240	6.3		
				1245	6.3		
				1250	6.3		
				1255	6.3		
				1300	6.3		
				1305	6.3		
				1310	6.3		
				1315	6.3		
				1320	6.3		
				1325	6.3		
				1330	6.3		
				1335	6.3		
				1340	6.3		
				1345	6.3		
				1350	6.3		
				1355	6.3		
				1400	6.3		
				1405	6.3		
				1410	6.3		
				1415	6.3		
				1420	6.3		
				1425	6.3		
				1430	6.3		
				1435	6.3		
				1440	6.3		
				1445	6.3		
				1450	6.3		
				1455	6.3		
				1500	6.3		
				1505	6.3		
				1510	6.3		
				1515	6.3		
				1520	6.3		
				1525	6.3		
				1530	6.3		
				1535	6.3		
				1540	6.3		
				1545	6.3		
				1550	6.3		
				1555	6.3		
				1600	6.3		
				1605	6.3		
				1610	6.3		
				1615	6.3		
				1620	6.3		
				1625	6.3		
				1630	6.3		
				1635	6.3		
				1640	6.3		
				1645	6.3		
				1650	6.3		
				1655	6.3		
				1700	6.3		
				1705	6.3		
				1710	6.3		
				1715	6.3		
				1720	6.3		
				1725	6.3		
				1730	6.3		
				1735	6.3		
				1740	6.3		
				1745	6.3		
				1750	6.3		
				1755	6.3		
				1800	6.3		
				1805	6.3		
				1810	6.3		
				1815	6.3		
				1820	6.3		
				1825	6.3		
				1830	6.3		
				1835	6.3		
				1840	6.3		
				1845	6.3		
				1850	6.3		
				1855	6.3		
				1860	6.3		
				1865	6.3		
				1870	6.3		
				1875	6.3		
				1880	6.3		
				1885	6.3		
				1890	6.3		
				1895	6.3		
				1900	6.3		
				1905	6.3		
				1910	6.3		
				1915	6.3		
				1920	6.3		
				1925	6.3		
				1930	6.3		
				1935	6.3		
				1940	6.3		
				1945	6.3		
				1950	6.3		
				1955	6.3		
				1960	6.3		
				1965	6.3		
				1970	6.3		
				1975	6.3		
				1980	6.3		
				1985	6.3		
				1990	6.3		
				1995	6.3		
				2000	6.3		
				2005	6.3		
				2010	6.3		
				2015	6.3		
				2020	6.3		
				2025	6.3		
				2030	6.3		
				2035	6.3		
				2040	6.3		
				2045	6.3		
				2050	6.3		
				2055	6.3		
				2060	6.3		
				2065	6.3		
				2070	6.3		
				2075	6.3		
				2080	6.3		
				2085	6.3		
				2090	6.3		
				2095	6.3		
				2100	6.3		
				2105	6.3		
				2110	6.3		
				2115	6.3		
				2120	6.3		
				2125	6.3		
				2130	6.3		
				2135	6.3		
				2140	6.3		
				2145	6.3		
				2150	6.3		
				2155	6.3		
				2160	6.3		
				2165	6.3		
				2170	6.3		
				2175	6.3		
				2180	6.3		
				2185	6.3		
				2190	6.3		
				2195	6.3		
				2200	6.3		
				2205	6.3		
				2210	6.3		
				2215	6.3		
				2220	6.3		
				2225	6.3		
				2230	6.3		
				2235	6.3		
				2240	6.3		
				2245	6.3		
				2250	6.3		
				2255	6.3		
				2260	6.3		
				2265	6.3		
				2270	6.3		
				2275	6.3		
				2280	6.3		
				2285	6.3		
				2290	6.3		
				2295	6.3		
				2300	6.3		
				2305	6.3		
				2310	6.3		
				2315	6.3		
				2320	6.3		
				2325	6.3		
				2330	6.3		
				2335	6.3		
				2340	6.3		
				2345	6.3		
				2350	6.3		
				2355	6.3		
				2360	6.3		
				2365	6.3		
				2370	6.3		
				2375	6.3		
				2380	6.3		
				2385	6.3		
				2390	6.3		
				2395	6.3		
				2400	6.3		
				2405	6.3		
				2410	6.3		
				2415	6.3		
				2420	6.3		
				2425	6.3		
				2430	6.3		
				2435	6.3		
				2440	6.3		
				2445	6.3		
				2450	6.3		
				2455	6.3		
				2460	6.3		
				2465	6.3		
				2470	6.3		
				2475	6.3		
				2480	6.3		
				2485	6.3		
				2490	6.3		
				2495	6.3		
				2500	6.3		
				2505	6.3		
				2510	6.3		
				2515	6.3		
				2520	6.3		
				2525	6.3		
				2530	6		

**CONTINUOUS ANALYZER DAILY DATA**

Plant: C.M.G. - T-100-A Run: Unit 1 Run A  
Date: 10-12-87 Pollutant:  
Operator: Sample Size:  
Strip Chart Analyzer Serial No.:  
Recorder Type: Analyze Model:  
Inst. Span Range: Output Signal Format:  
C.M.G. Span Gas Concentration

Output Signal Format:  
 CMy Span Gas Conc.: 10 Scl. 7 Loop 1 Z.Scl.  
 Meter/Recorder Reading: 21.5 17 30 16.5  
~~4 2.5~~  
~~4 2.5~~ 7 31.15 16.5

CALIBRATION (SCALE FACTOR/LINEAR REGRESSION, ETC.)

Time HR:MIN	Chart Reading	Scale Factor	ppm	Time HR:MIN	Chart Reading	Scale Factor	ppm
1045	29.75			1050	29.75		
1050	29.25			1055	29.75		
1055	29.50			1100	29.75		
1100	29.75			1105	29.75		
1105	29.50			1110	29.75		
1110	29.75			1115	29.75		
1115	29.75			1120	29.75		
1120	29.75			1125	29.75		
1125	29.75			1130	29.75		
1130	29.75			1135	29.75		
1135	29.75			1140	29.75		
1140	29.75			1145	29.75		
1145	29.75						

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## CONTINUOUS ANALYZER DAILY DATA

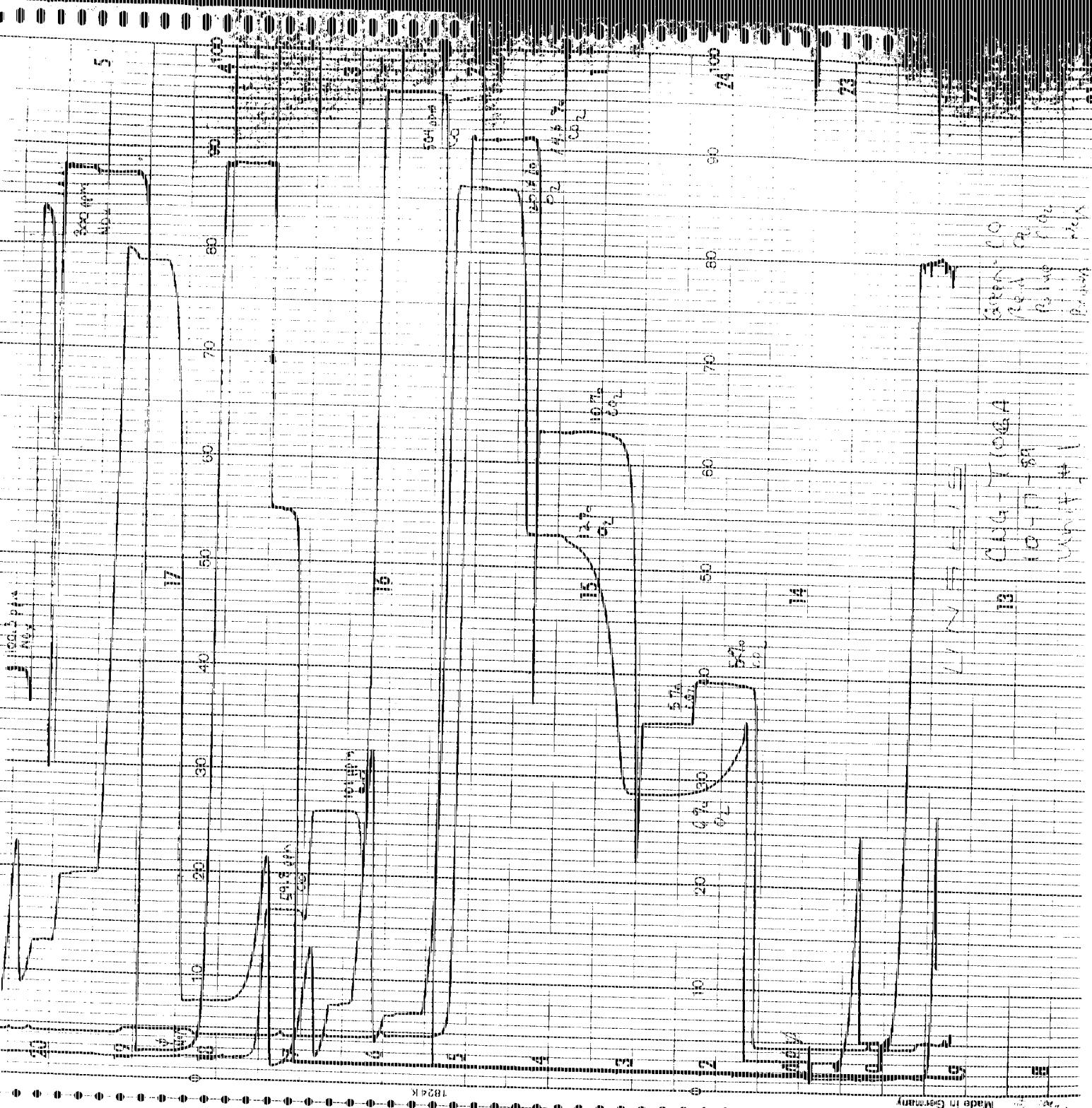
Plant: CNG - TICGA  
 Date: 10-17-89  
 Operator: Strip Chart  
 Recorder Type:  
 Inst. Span Range:  
 FID Span Gas Conc.: 0  
 Meter/Recorder Reading: 4.6

	Scale 1	Scale 2	Scale 3
A	4.0	19	35
B	4.0	17	34
C	4.0	14	31.5
D	4.0	19	31.5
			31.5

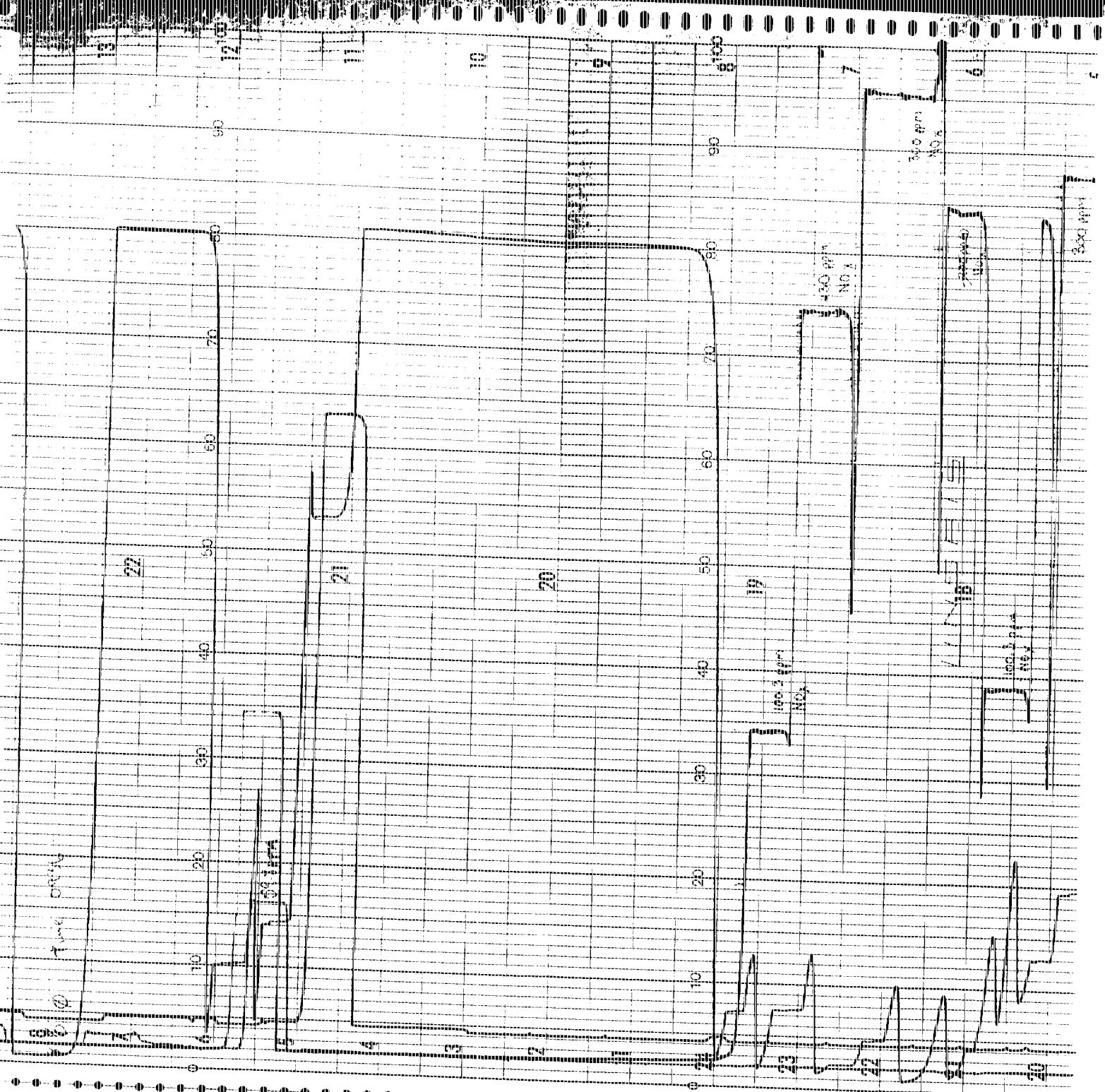
Run: Unit 1 Run A  
 Pollutant:  
 Sample Size:  
 Analyzer Serial No.:  
 Analyze Model:  
 Output Signal Format:

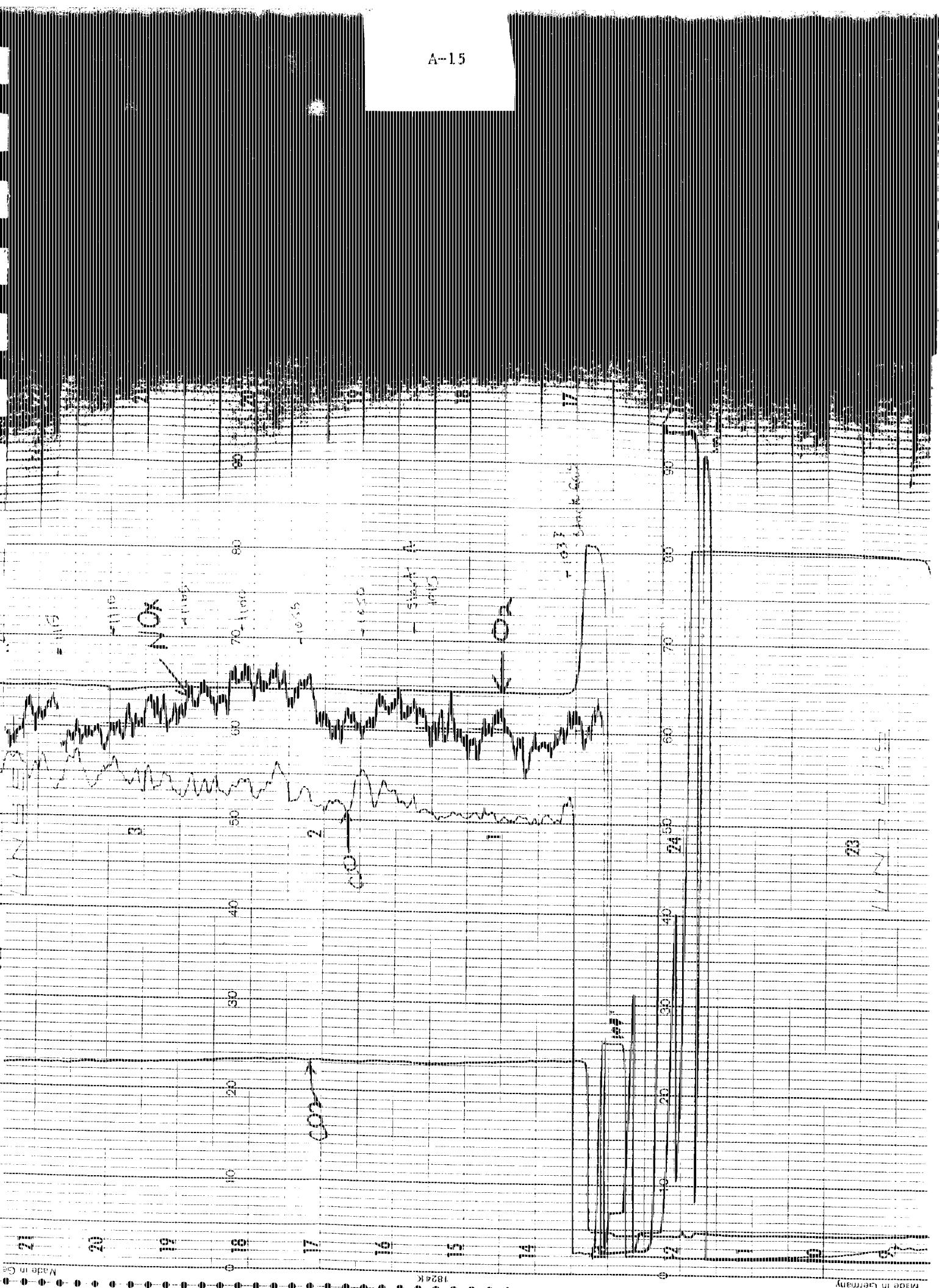
## CALIBRATION (SCALE FACTOR/LINEAR REGRESSION, ETC.)

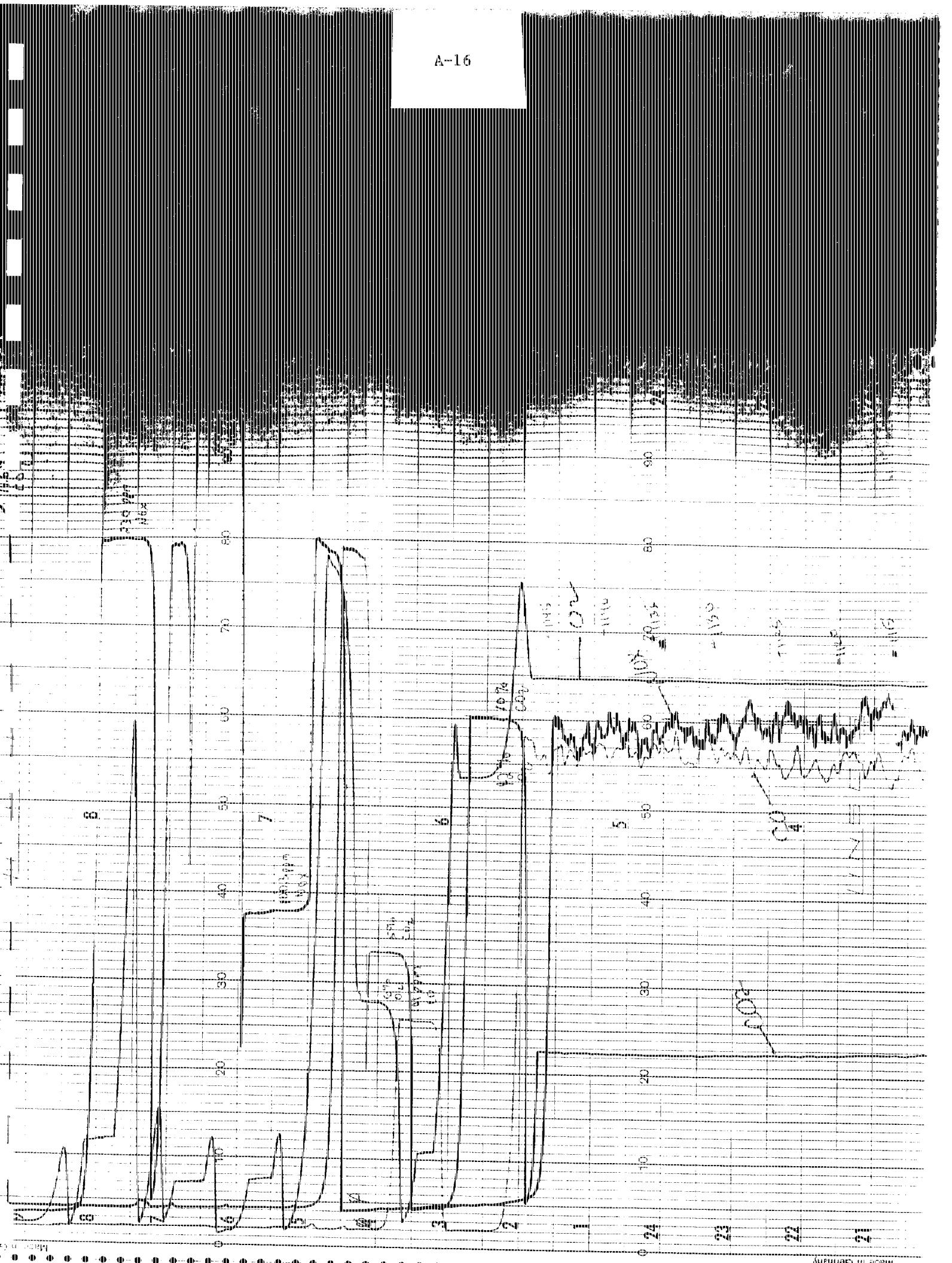
Time HR:MIN	Chart Reading	Scale Factor	Time HR:MIN	Chart Reading	Scale Factor	ppm
1045	31.5					
1050	31.5					
1055	31.5		1509	31.5		
1100	31.5		1514	31.5		
1105	31.5		1519	31.5		
1110	31.5		1524	31.5		
1115	31.5		1529	31.5		
1120	31.5		1534	31.5		
1125	31.5		1539	31.5		
1130	31.5		1544	31.5		
1135	31.5		1549	31.5		
1140	31.5		1554	31.5		
1145	31.5	35.710	1559	31.5		
			1604	31.5		
			1609	31.5	32.1	946.27
<hr/>						
B	31.5					
1312	31.5					
1317	31.5					
1322	31.5		1658	31.5		
1327	31.5		1703	31.5		
1332	31.5		1708	31.5		
1337	31.5		1713	31.5		
1342	31.5		1718	31.5		
1347	31.5		1723	31.5		
1352	31.5		1728	31.5		
1357	31.5		1733	31.5		
1402	31.5		1738	31.5		
1407	31.5		1743	31.5		
1412	31.5	31.6	1748	31.5		
			1753	31.5		
			1758	31.5	31.77	1027.29

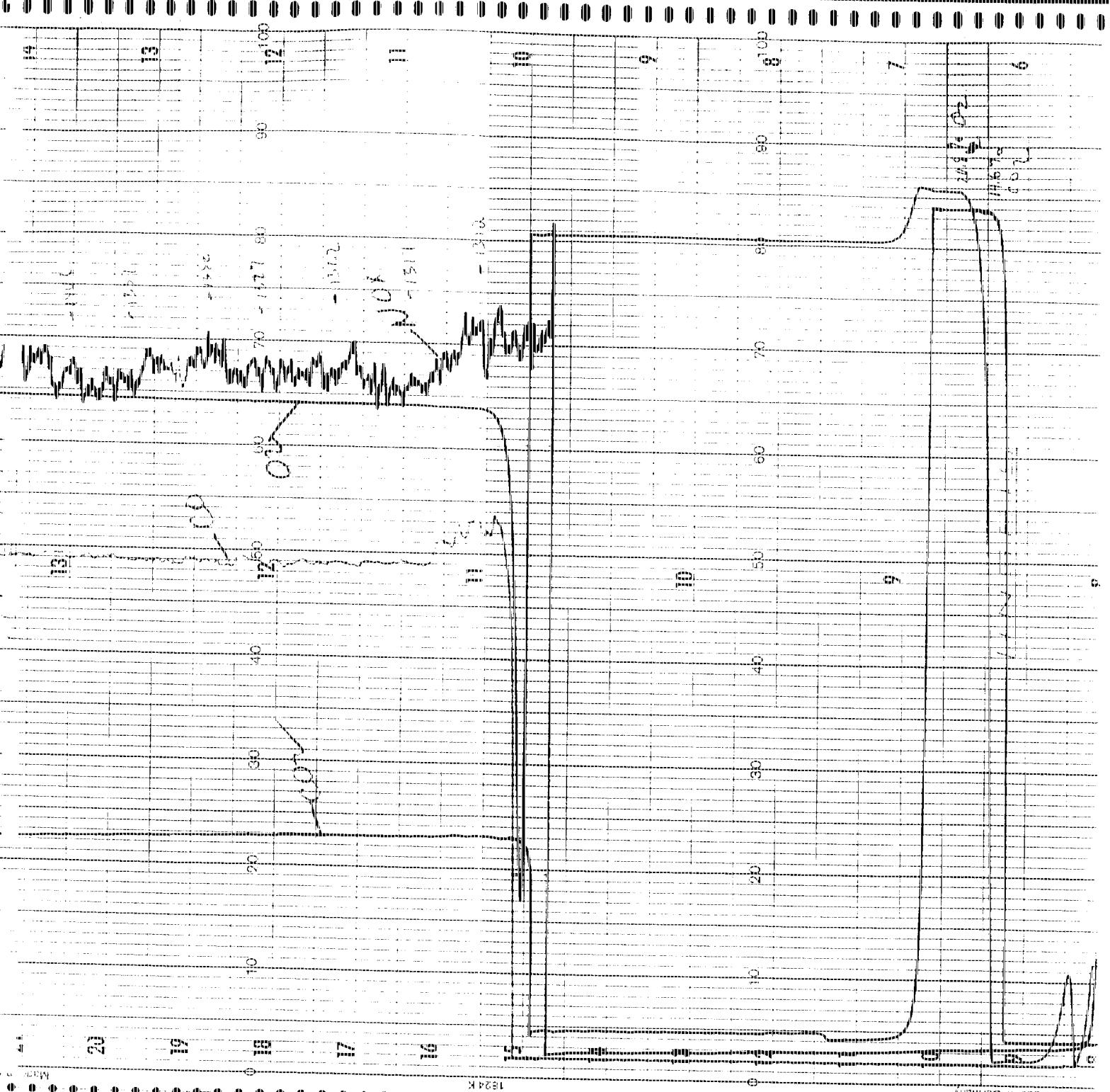


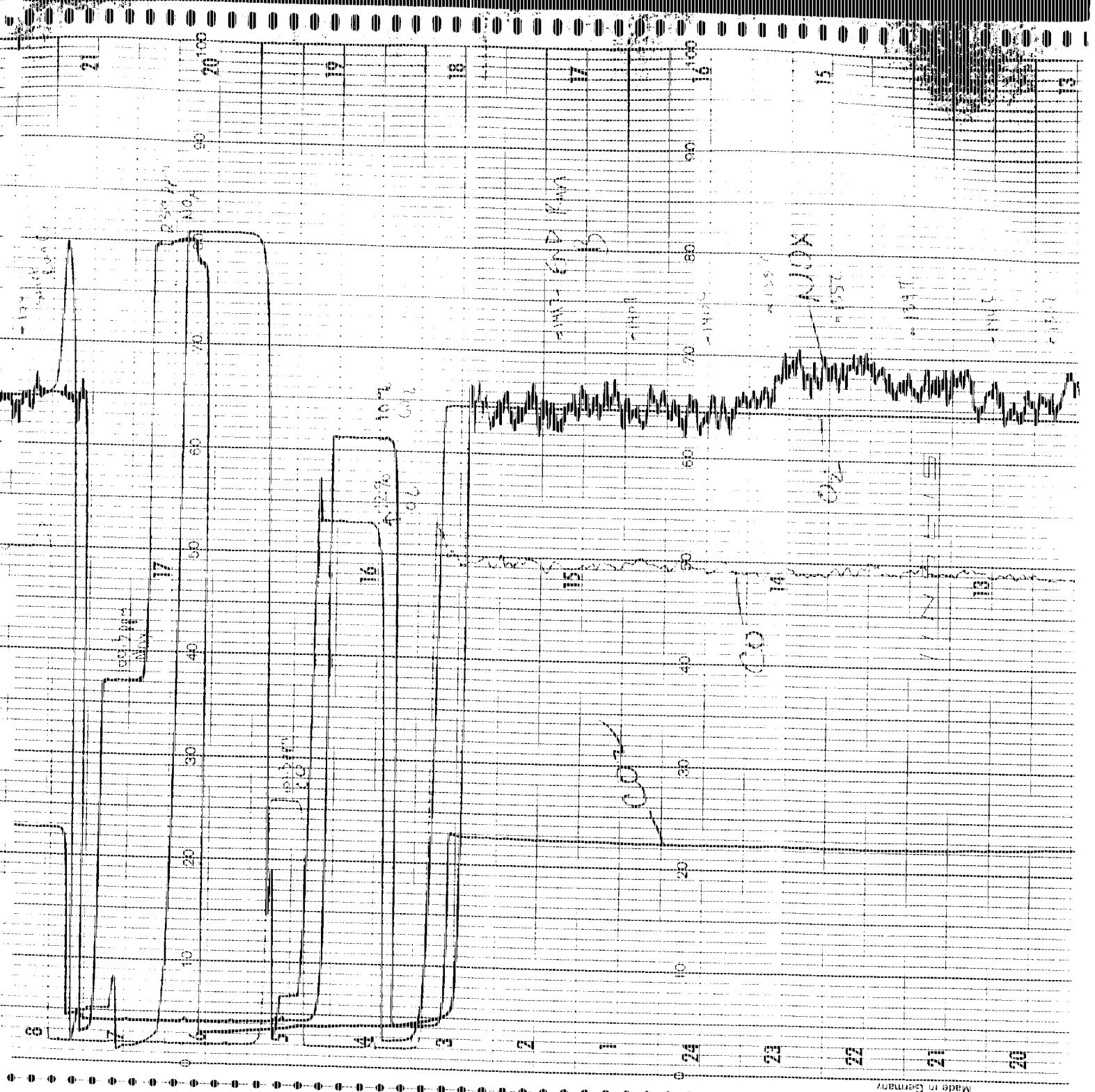
8 - 14

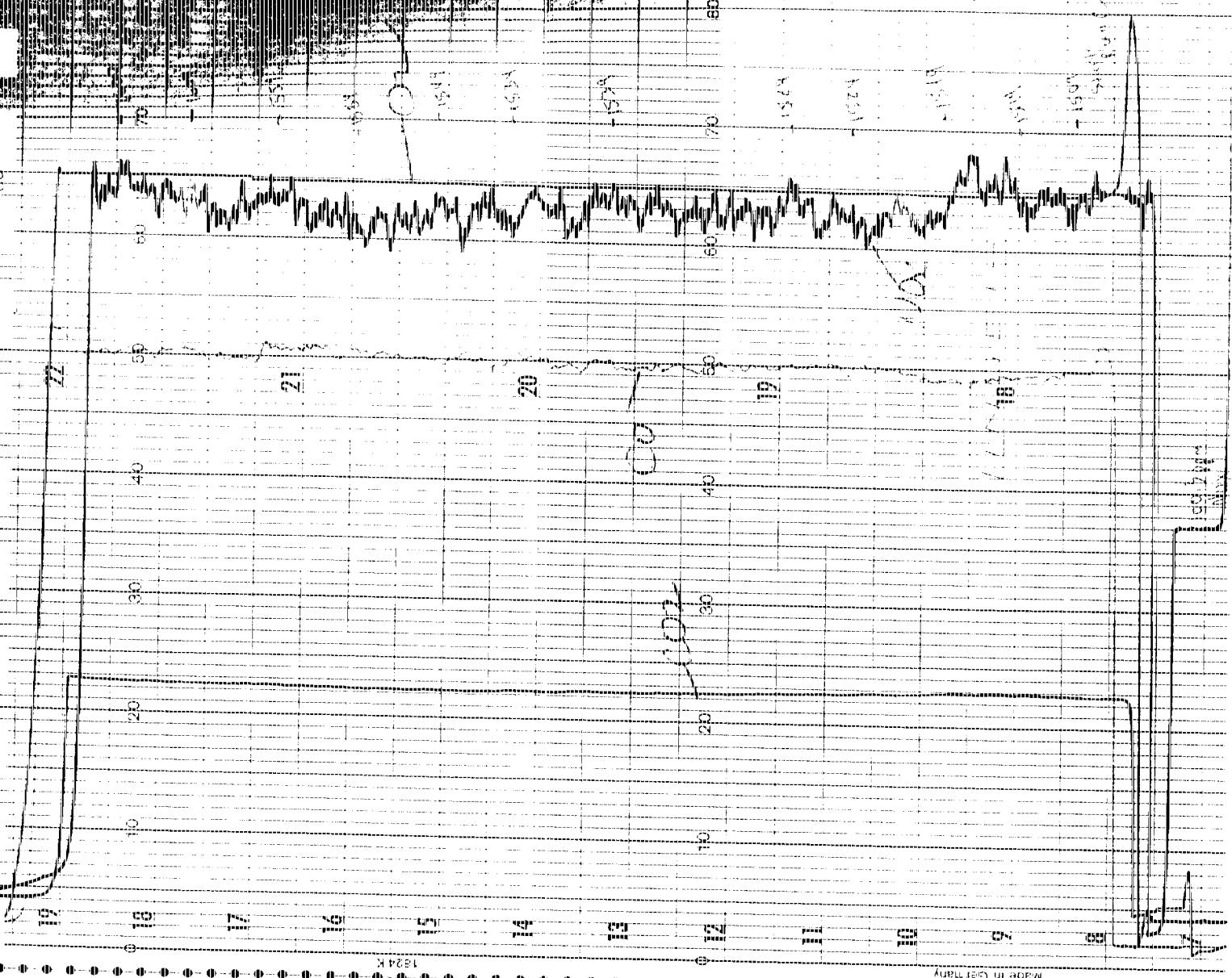




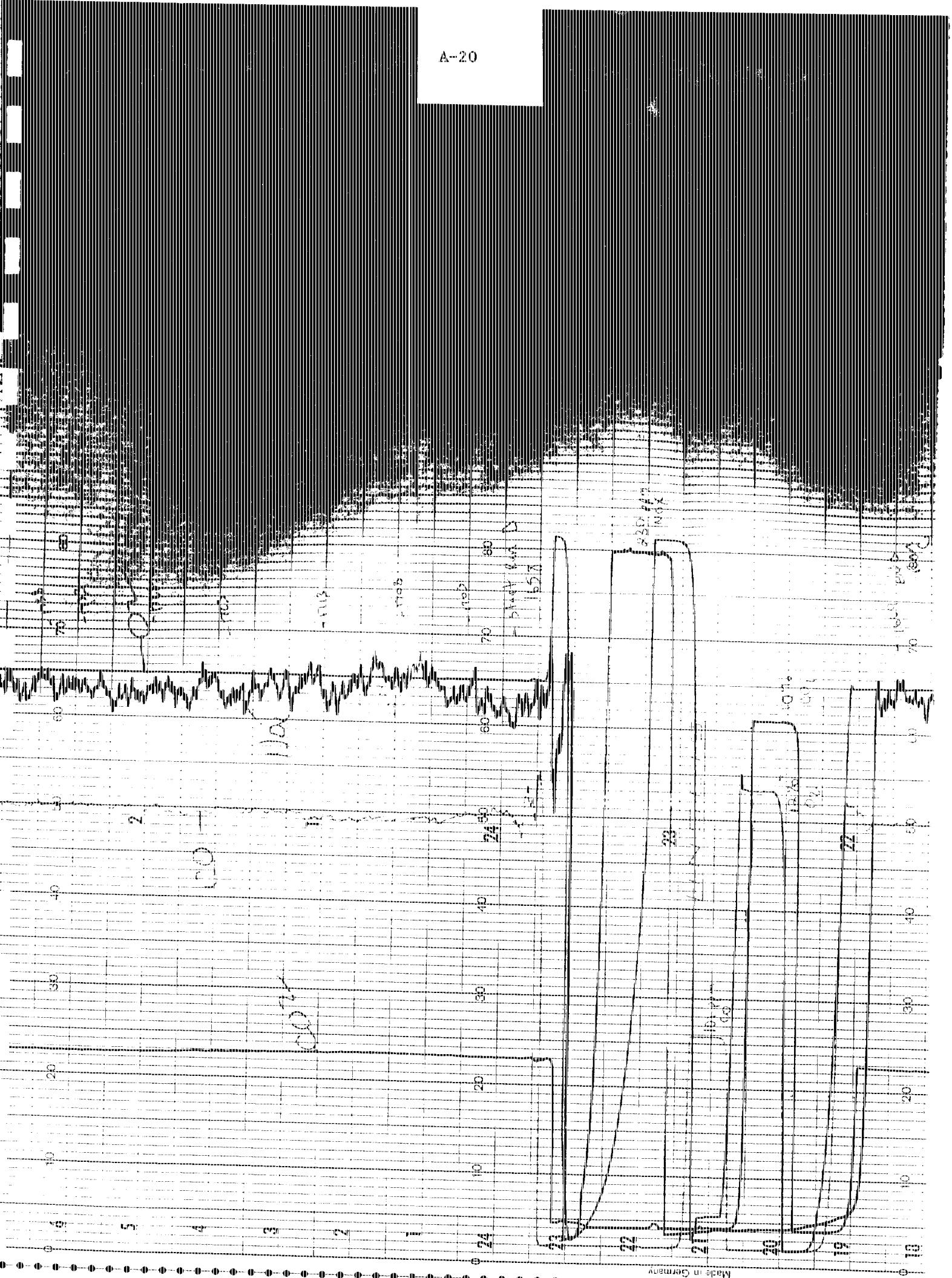




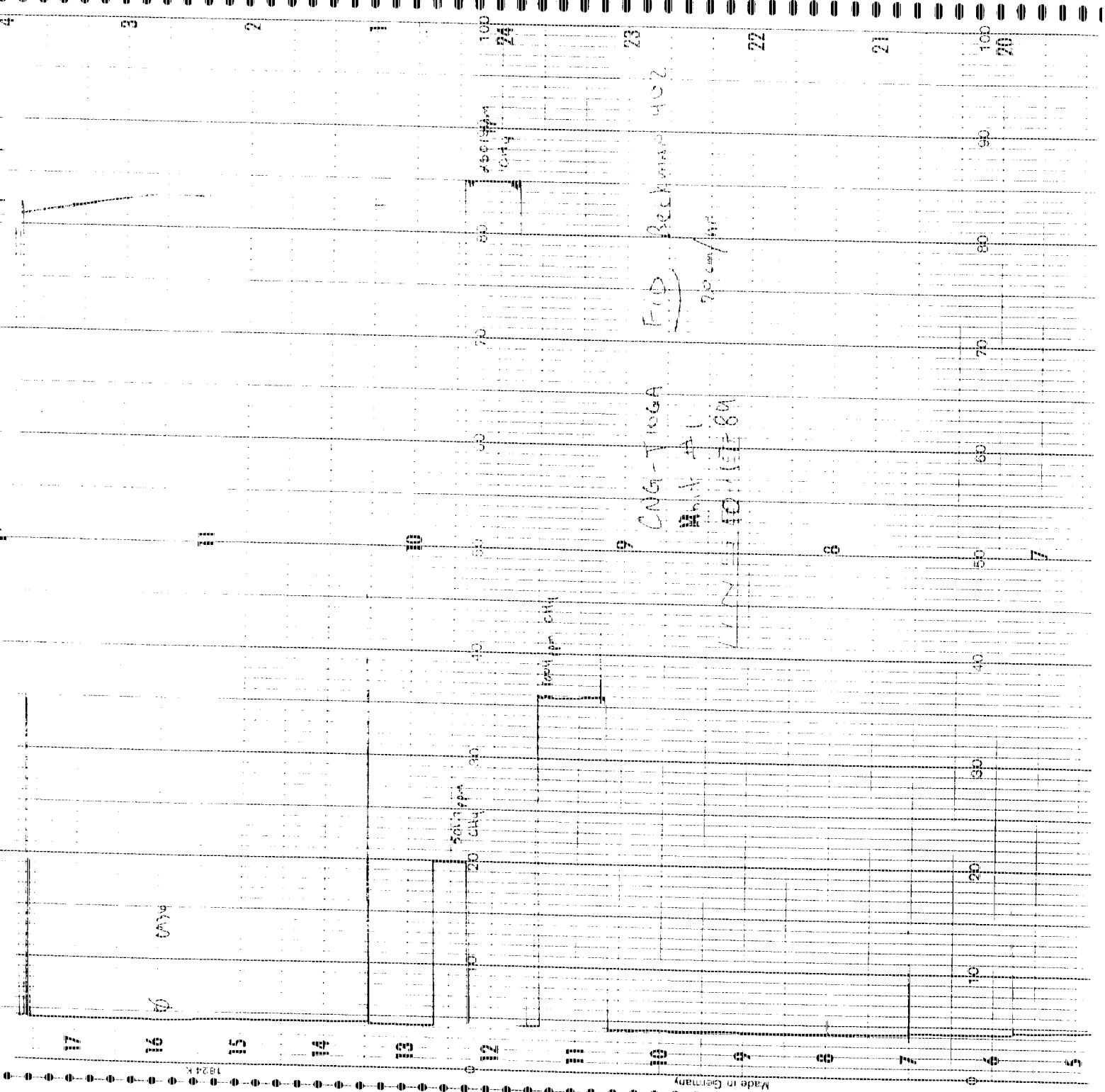


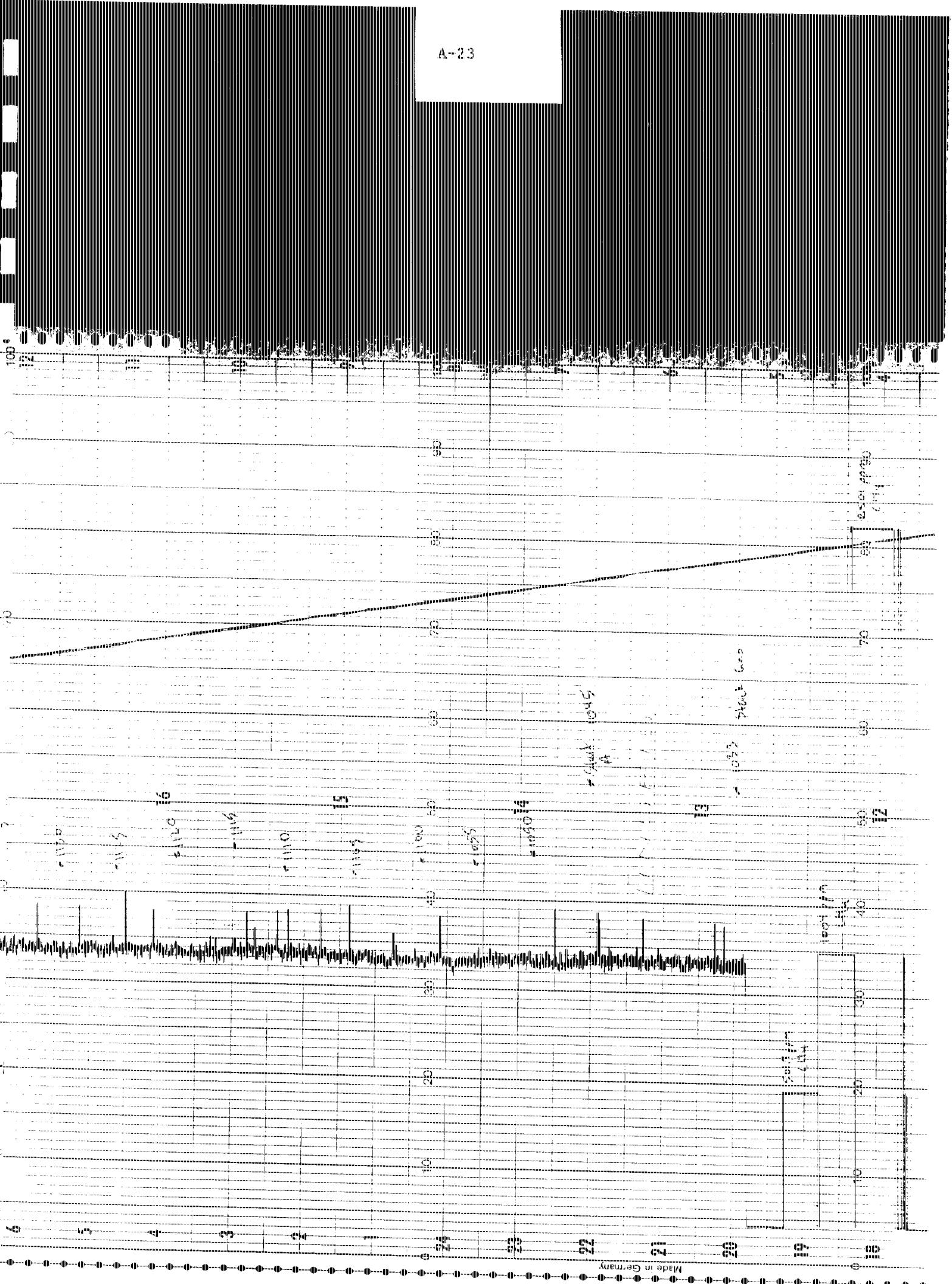


A-20

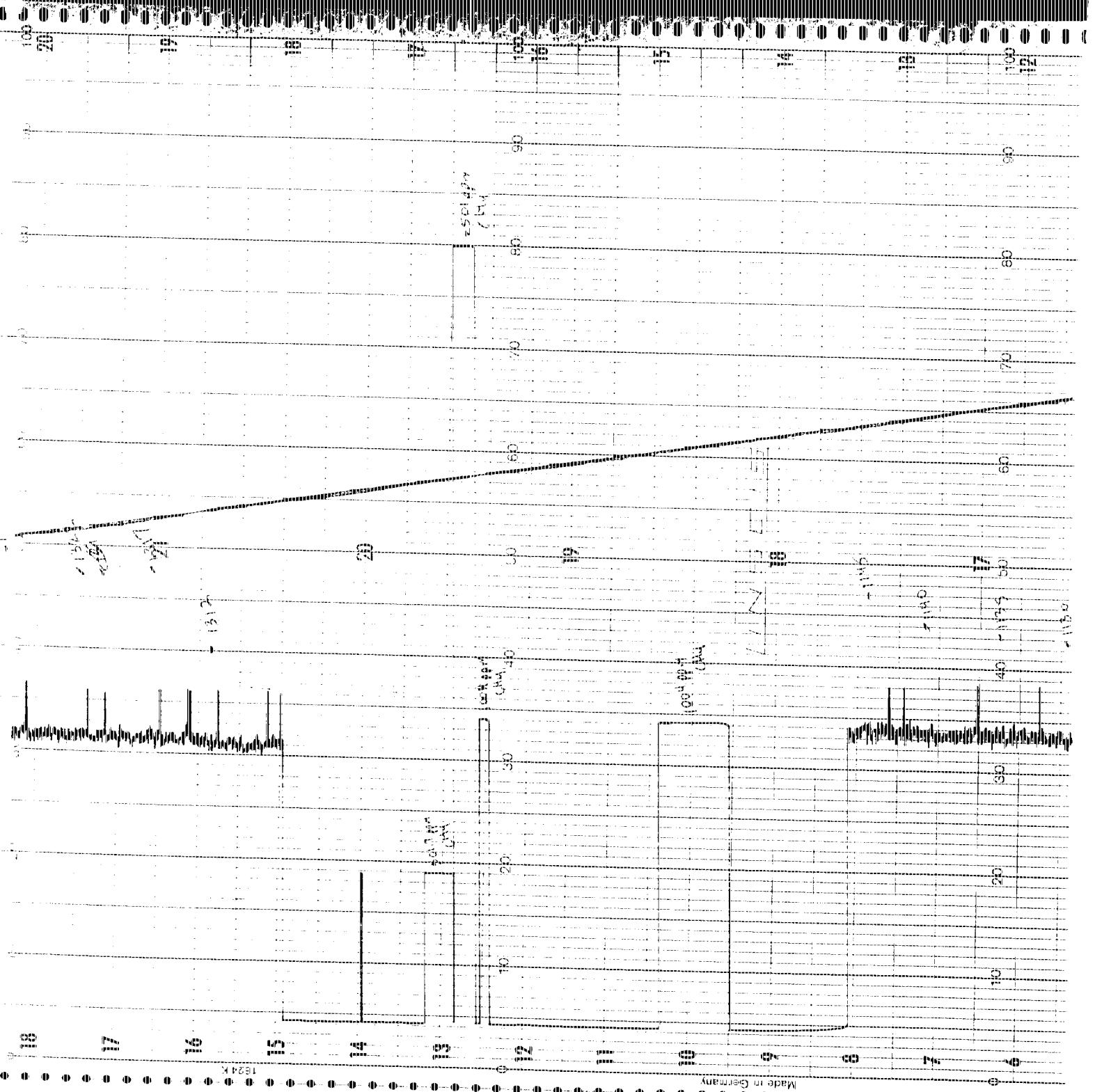


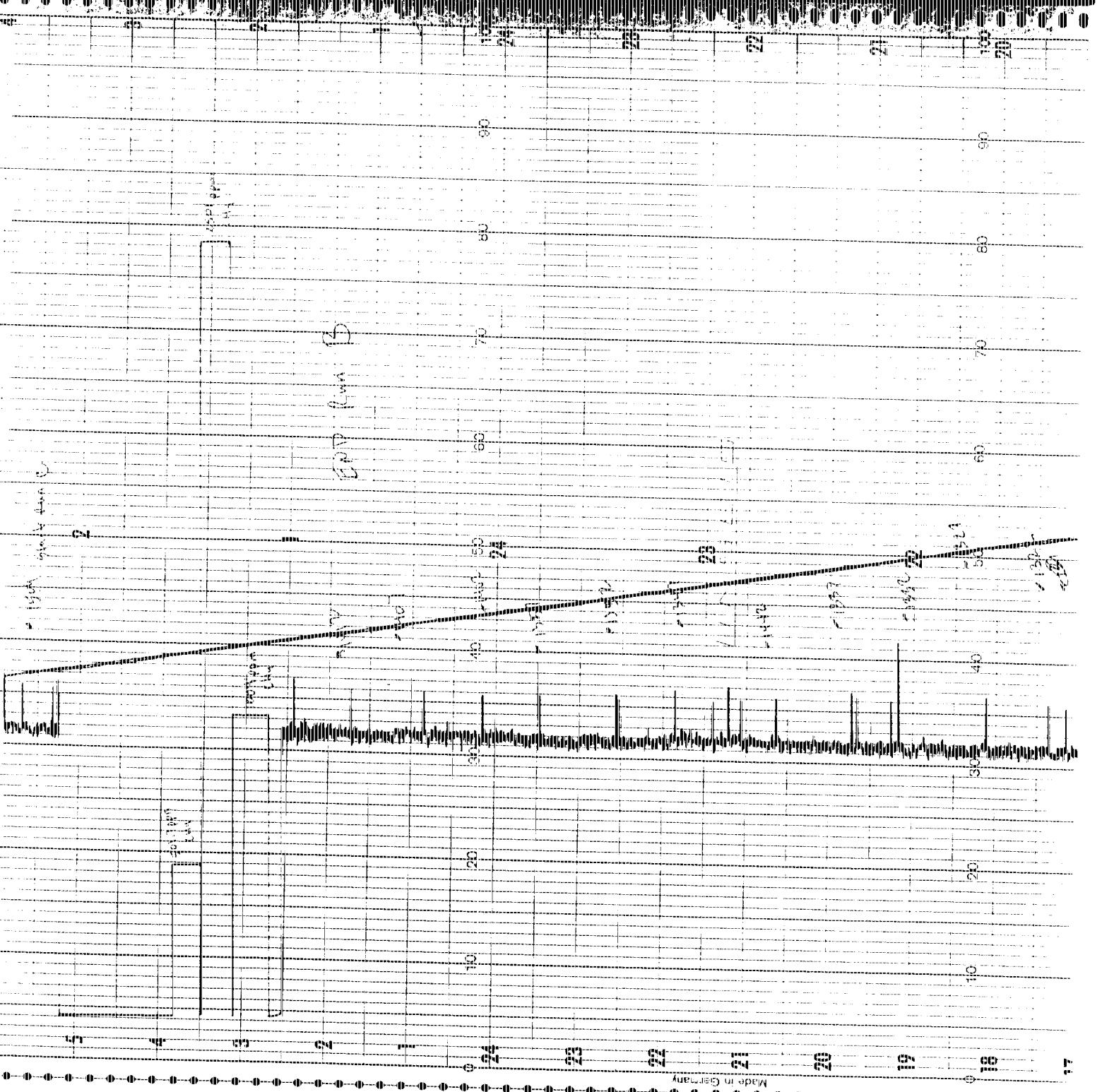




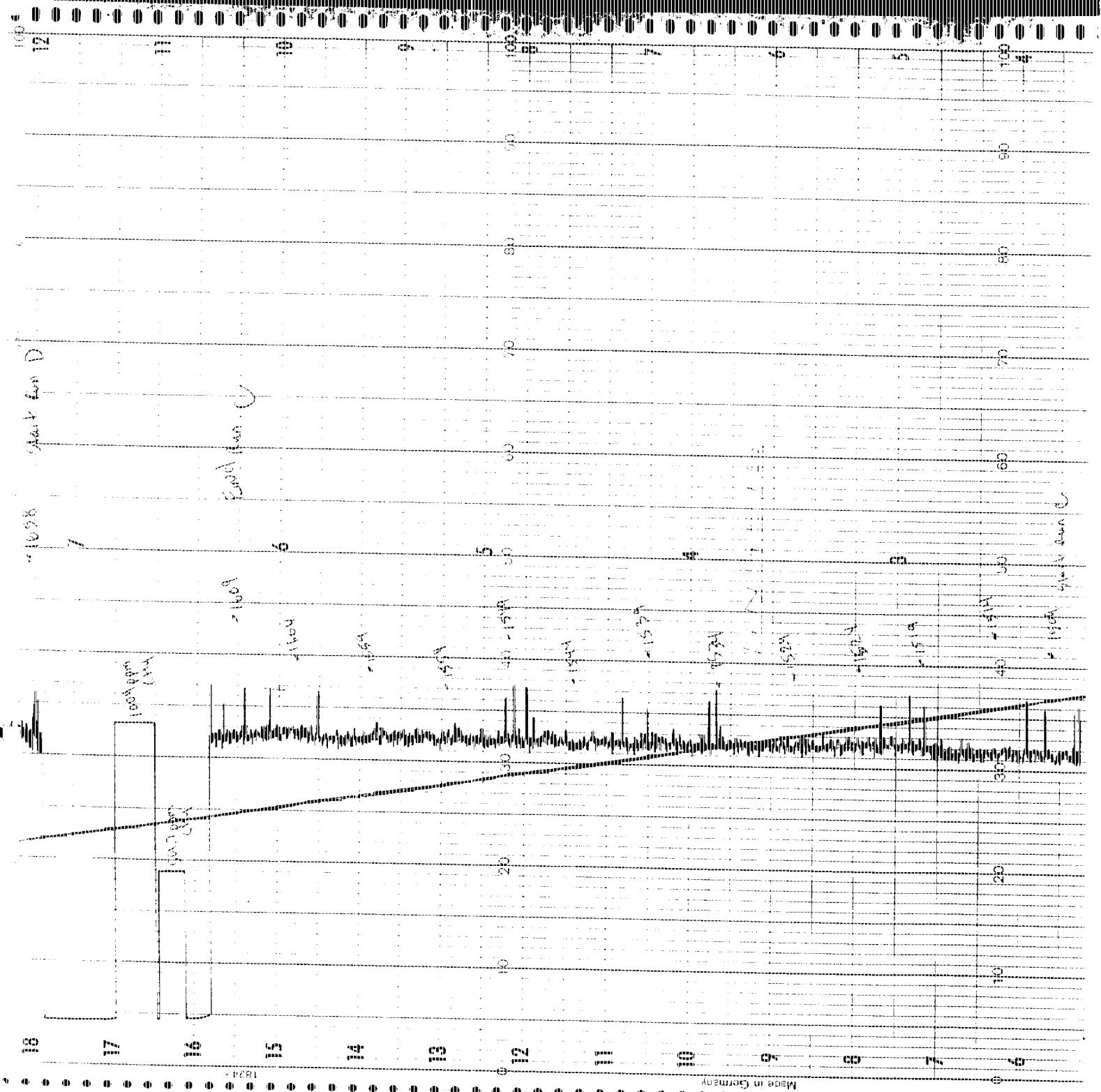


A-24

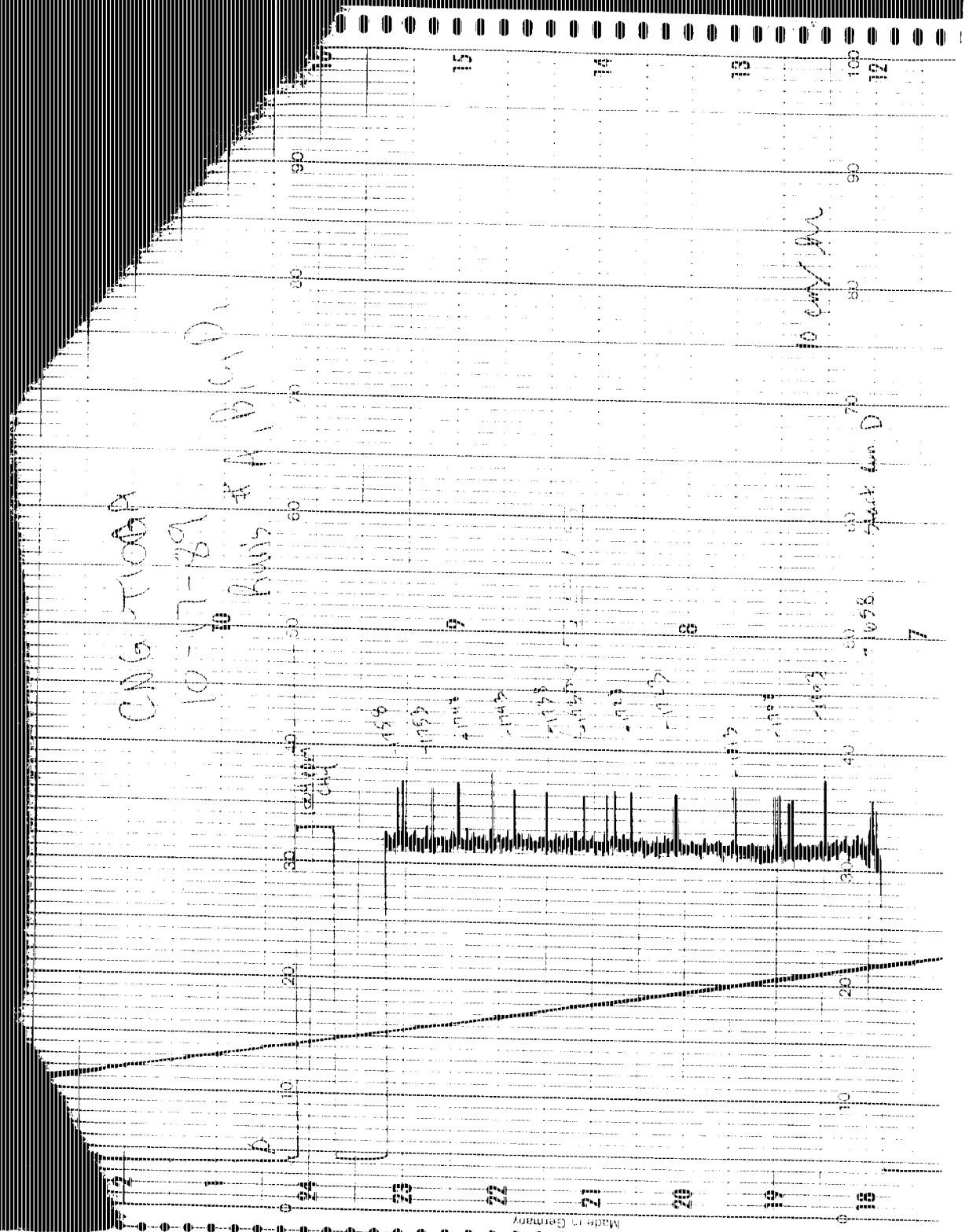


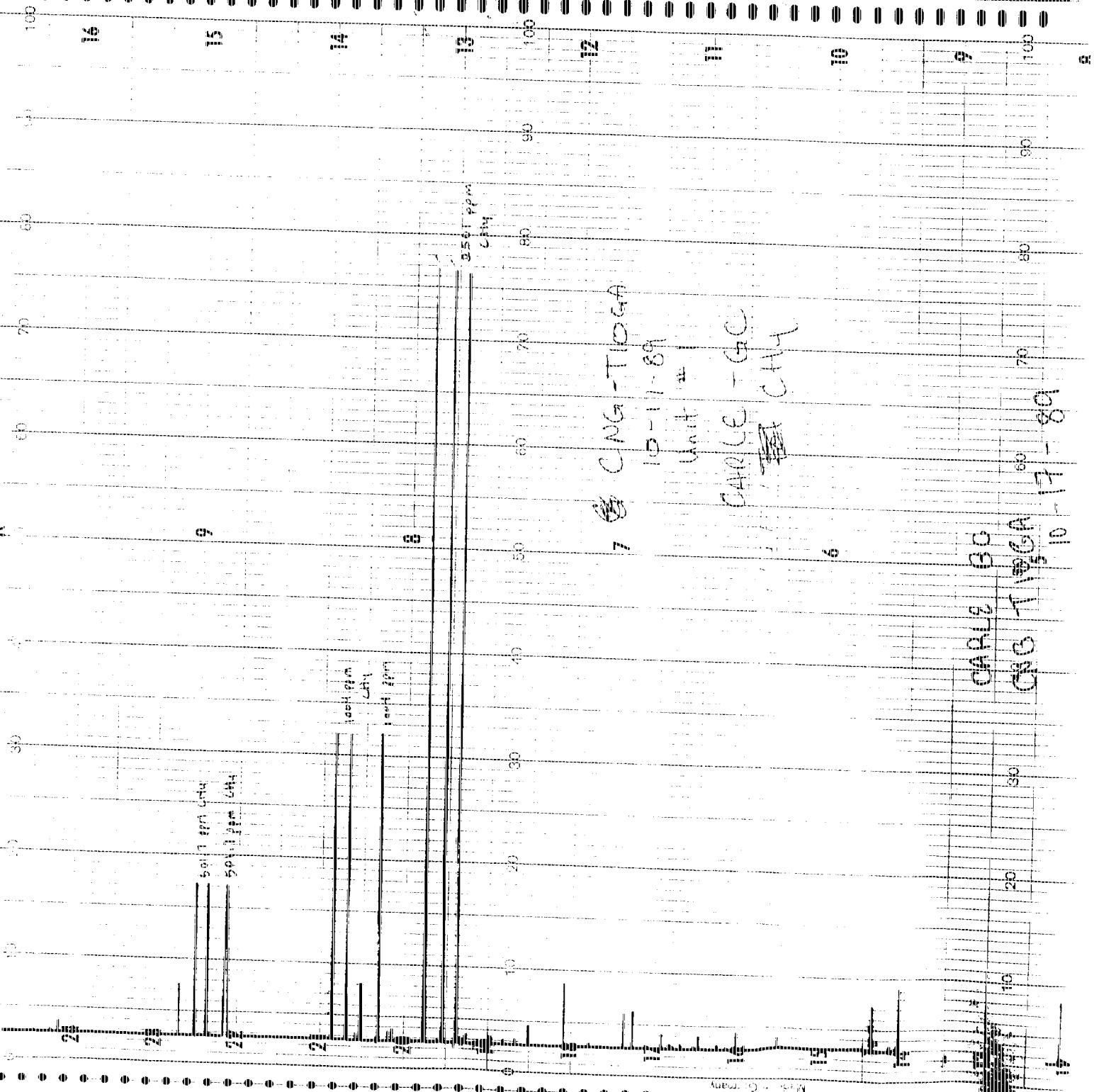


A-26

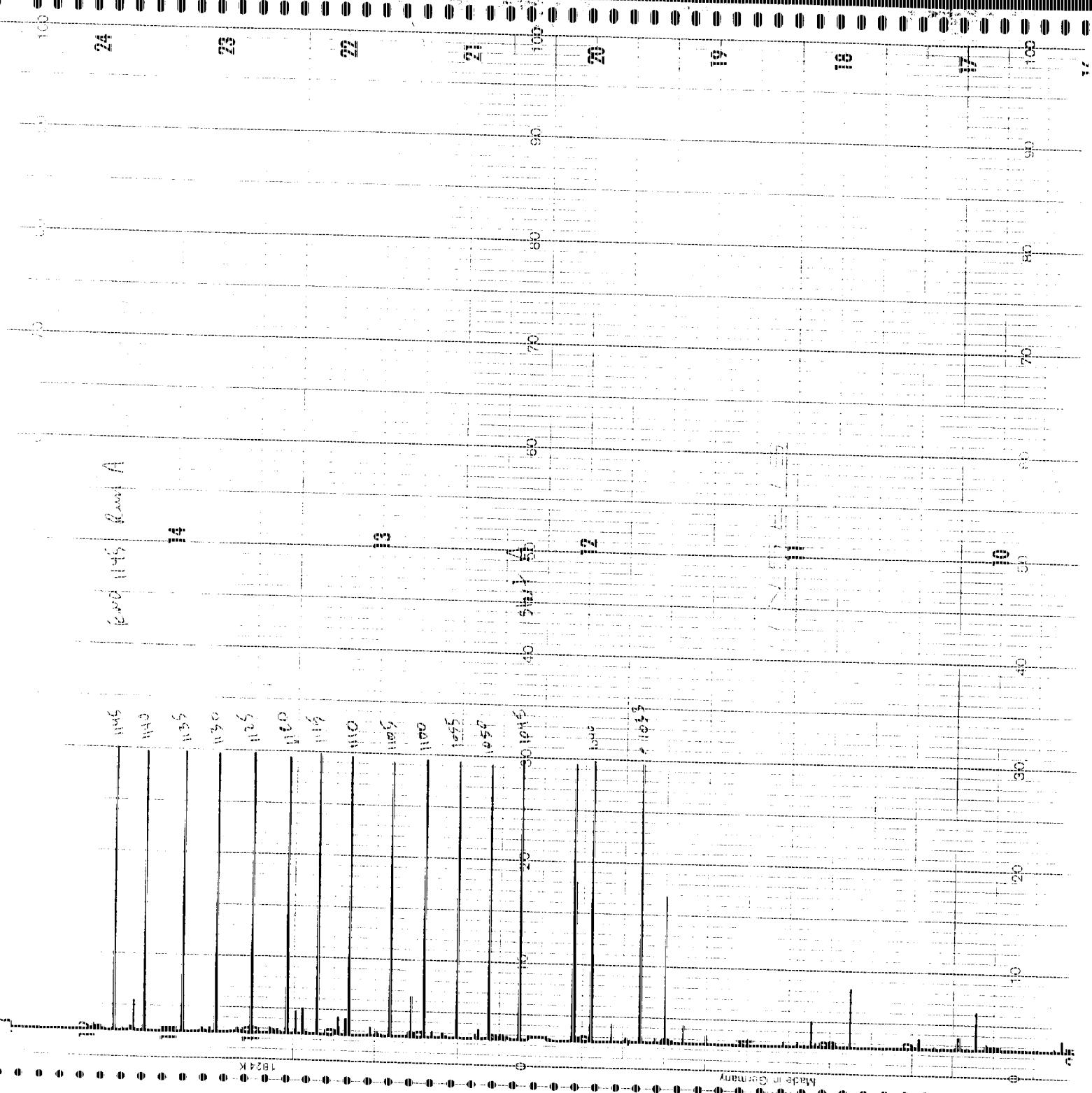


A-27

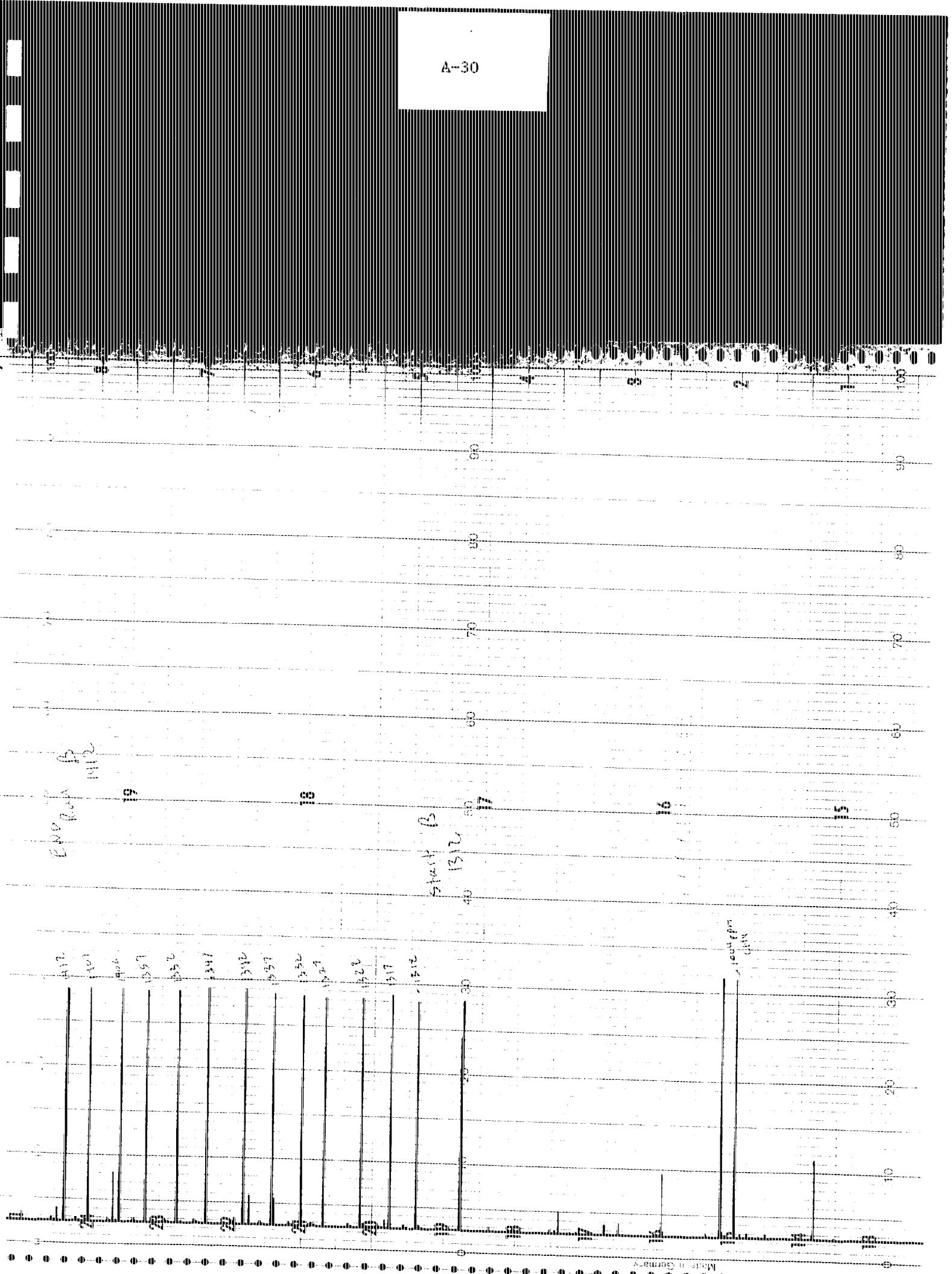




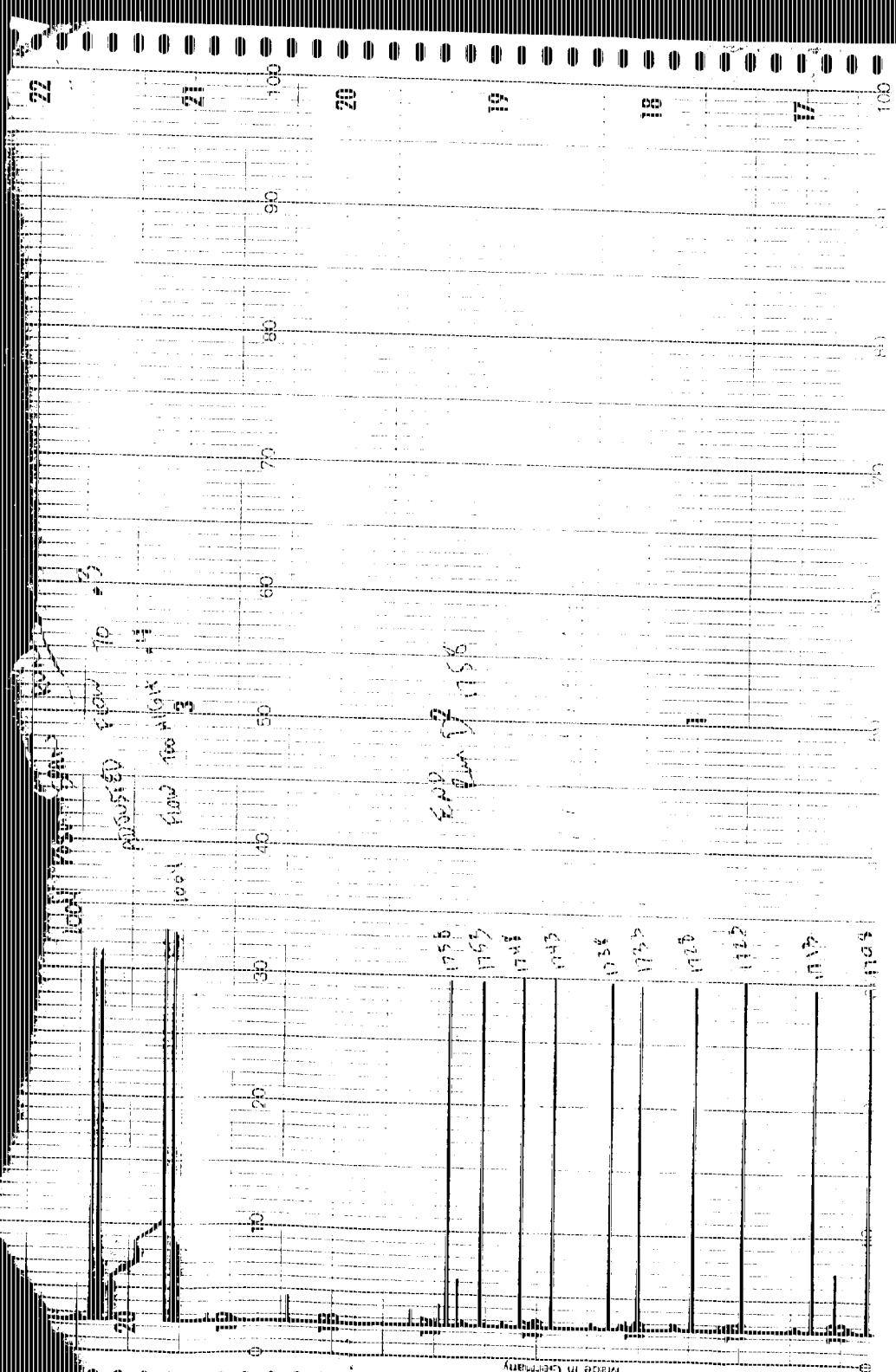
A-29



A-30







APPENDIX B

ENGINE NO. 2 FIELD DATA



## TRAVERSE POINT LOCATION FOR CIRCULAR DUCTS

PLANT CNG - Tioga Station  
DATE 10-11-89

SAMPLING LOCATION Wait #1 and #2 - outlet stages

**INSIDE OF FAR WALL TO**

OUTSIDE OF NIPPLE (DISTANCE A) 40.25"

**INSIDE OF REAR WALL TO**

OUTSIDE OF NIPPLE DISTANCE IN - 1-75"

**STACK I.D., DISTANCE A - DISTANCE B: 38.50"**

**NEAREST UPSTREAM DISTURBANCE**

## **NEAREST DOWNSTREAM DISTURBANCE**

**CALCULATOR** M. D. Gallagher

### **SCHEMATIC OF SAMPLING LOCATION**

## Project Number

Plant A/C Togas Station

Date 07-12-87

Sample Location Line 2 Stack

Run Number #2 - 1

Operator Ed GaitherAmbient Temperature 78Barometer 24.99Static Pressure 0.72 / 0.71Pitot Factor 0.87Inches HG 2.2Leak Rate 0.007Time 14:00:07Sampling SamplingGas Meter Reading 198.525Init. 198.525dp 0.00V 0.00Press. 0.00Temp. 70dp 0.00V 0.00Press. 0.00Temp. 70

## Information for meter correction

P<sub>0</sub> = 4232A<sub>CO<sub>2</sub></sub> = 0.2T<sub>0</sub> = 70T<sub>g</sub> = 70B<sub>HS</sub> = 0.9931T<sub>d</sub> = 2.00d<sub>HS</sub> = 32.5"

Stack ID 32.5"

K = 0.02

C<sub>HS</sub> = 0.21T<sub>0</sub> = 70T<sub>g</sub> = 70B<sub>HS</sub> = 0.9931T<sub>d</sub> = 2.00d<sub>HS</sub> = 32.5"

Stack ID 32.5"

K = 0.02

C<sub>HS</sub> = 0.21T<sub>0</sub> = 70T<sub>g</sub> = 70B<sub>HS</sub> = 0.9931T<sub>d</sub> = 2.00d<sub>HS</sub> = 32.5"

Stack ID 32.5"

K = 0.02

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Stack ID 32.5"

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Stack ID 32.5"

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Stack ID 32.5"

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Stack ID 32.5"

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Stack ID 32.5"

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Stack ID 32.5"

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C<sub>HS</sub> = 0.21T<sub>0</sub> = 70T<sub>g</sub> = 70B<sub>HS</sub> = 0.9931T<sub>d</sub> = 2.00d<sub>HS</sub> = 32.5"

Stack ID 32.5"

K = 0.02

C<sub>HS</sub> = 0.21T<sub>0</sub> = 70T<sub>g</sub> = 70B<sub>HS</sub> = 0.9931T<sub>d</sub> = 2.00d<sub>HS</sub> = 32.5"

Stack ID 32.5"

K = 0.02

C<sub>HS</sub> = 0.21T<sub>0</sub> = 70T<sub>g</sub> = 70B<sub>HS</sub> = 0.9931T<sub>d</sub> = 2.00d<sub>HS</sub> = 32.5"

Stack ID 32.5"

K = 0.02

C<sub>HS</sub> = 0.21T<sub>0</sub> = 70T<sub>g</sub> = 70B<sub>HS</sub> = 0.9931T<sub>d</sub> = 2.00d<sub>HS</sub> = 32.5"

Stack ID 32.5"

K = 0.02

C<sub>HS</sub> = 0.21T<sub>0</sub> = 70T<sub>g</sub> = 70B<sub>HS</sub> = 0.9931T<sub>d</sub> = 2.00d<sub>HS</sub> = 32.5"

Stack ID 32.5"

K = 0.02

C<sub>HS</sub> = 0.21T<sub>0</sub> = 70T<sub>g</sub> = 70B<sub>HS</sub> = 0.9931T<sub>d</sub> = 2.00d<sub>HS</sub> = 32.5"

Stack ID 32.5"

K = 0.02

C<sub>HS</sub> = 0.21T<sub>0</sub> = 70T<sub>g</sub> = 70B<sub>HS</sub> = 0.9931T<sub>d</sub> = 2.00d<sub>HS</sub> = 32.5"

Stack ID 32.5"

K = 0.02

C<sub>HS</sub> = 0.21T<sub>0</sub> = 70T<sub>g</sub> = 70B<sub>HS</sub> = 0.9931T<sub>d</sub> = 2.00d<sub>HS</sub> = 32.5"

Stack ID 32.5"

K = 0.02

C<sub>HS</sub> = 0.21T<sub>0</sub> = 70T<sub>g</sub> = 70B<sub>HS</sub> = 0.9931T<sub>d</sub> = 2.00d<sub>HS</sub> = 32.5"

Stack ID 32.5"

K = 0.02

C<sub>HS</sub> = 0.21T<sub>0</sub> = 70T<sub>g</sub> = 70B<sub>HS</sub> = 0.9931T<sub>d</sub> = 2.00d<sub>HS</sub> = 32.5"

## Plant CNG Trigas Station

Date 10-12-97

Sample Location Gauge #2 StackRun Number #2 - 2Operator 221.0. Ga. HeightAmbient Temperature 70°Barometer 28.03Static Pressure 2.71 / 0.71Pitot Factor 0.92Inches Hg 22Leak Rate 0.003

## Traverser Sampling

Gas Meter Reading

Veli. Press.

Orif. Press.

dH

dp

dP

dV

dA

dF

dG

dH

dI

dT

dM

dN

dO

dP

dQ

dR

dS

dT

dU

dV

dW

dX

dY

dZ

dA

dB

dC

dD

dE

dF

dG

dH

dI

dJ

dK

dL

dM

dN

dO

dP

dQ

dR

dS

dT

dU

dV

dW

dX

dY

dZ

dA

dB

dC

dD

dE

dF

dG

dH

dI

dJ

dK

dL

dM

dN

dO

dP

dQ

dR

dS

dT

dU

dV

dW

dX

dY

dZ

dA

dB

dC

dD

dE

dF

dG

dH

dI

dJ

dK

dL

dM

dN

dO

dP

dQ

dR

dS

dT

dU

dV

dW

dX

dY

dZ

dA

dB

dC

dD

dE

dF

dG

dH

dI

dJ

dK

dL

dM

dN

dO

dP

dQ

dR

dS

dT

dU

dV

dW

dX

dY

dZ

dA

dB

dC

dD

dE

dF

dG

dH

dI

dJ

dK

dL

dM

dN

dO

dP

dQ

dR

dS

dT

dU

dV

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dB

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dO

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dK

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dO

dP

dQ

dR

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dU

dV

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dX

dY

dZ

dA

dB

dC

dD

dE

dF

dG

dH

dI

dJ

dK

dL

dM

dN

dO

dP

dQ

dR

dS

dT

dU

dV

dW

dX

dY

dZ

dA

dB

dC

dD

dE

dF

dG

dH

dI

dJ

dK

dL

dM

dN

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dQ

dR

dS

dT

dU

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dB

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dX

dY

dZ

dA

dB

dC

dD

dE

dF

dG

dH

dI

dJ

dK

dL

dM

dN

dO

dP

dQ

dR

dS

dT

Project Number

Documentation of collection and extraction

Plant Coke Tower  
Date 10-12-87  
Sample Location Chif #2 Stack  
Run Number #2 - 3

Operator Bob Ballagh  
Ambient Temperature  
28.04

Barometer  
28.04  
Static Pressure = 0.711 = 0.56

Pitot Factor 0.64

Inches Hg 16 / 14 0.003

Leak Rate 0.007 0.003

Sampling Time 14:00:00

Scott Environmental Technology Inc.

Traverse Gas Meter Reading

Init. 247.832 dp

247.832 0.50

251.85 0.50

257.80 0.50

259.73 0.50

263.80 0.50

267.78 0.50

271.79 0.50

275.80 0.50

279.78 0.50

283.80 0.50

287.78 0.50

291.80 0.50

295.78 0.50

299.80 0.50

303.78 0.50

307.80 0.50

311.78 0.50

315.80 0.50

319.78 0.50

323.80 0.50

327.78 0.50

Veli. Press.

dp

Orif. Press.

dp

Stack Temp.

T<sub>a</sub>

T<sub>b</sub>

T<sub>c</sub>

T<sub>d</sub>

T<sub>e</sub>

T<sub>f</sub>

T<sub>g</sub>

T<sub>h</sub>

T<sub>i</sub>

T<sub>j</sub>

T<sub>k</sub>

T<sub>l</sub>

T<sub>m</sub>

T<sub>n</sub>

T<sub>o</sub>

T<sub>p</sub>

T<sub>q</sub>

T<sub>r</sub>

T<sub>s</sub>

T<sub>t</sub>

T<sub>u</sub>

T<sub>v</sub>

Filter Box Number

RAC 3

Probe Heater Setting

44

Filter Heater Setting

44

total m<sub>1</sub> N<sub>2</sub>

7.78

Stream Silica Gel

15.03

N<sub>2</sub>O<sub>2</sub>

3.37

Nozzle ID

4A

Start Time

14:29

Finish Time

14:29

B-5

## SAMPLE RECOVERY DATA

Plant: CNG Targa Station  
 Date: 10-12-89  
 Sampling Location: Unit #2 - outlet stack  
 Sample Type: WT - moisture  
 Run Number: \_\_\_\_\_  
 Sample Box Number: \_\_\_\_\_  
 Clean-up Man: M. D. Gallagher  
 Job Number: \_\_\_\_\_  
 Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

FRONT HALF

Filter Number: NA  
 Description of Filter: \_\_\_\_\_

MOISTURE

	<u>Run No. 1</u>	<u>Run No. 2</u>	<u>Run No. 3</u>
--	------------------	------------------	------------------

## Impingers

Final Volume:	<u>228.0</u>	ml	<u>224.0</u>	ml	<u>228.0</u>	ml
Initial Volume:	<u>200.0</u>	ml	<u>200.0</u>	ml	<u>200.0</u>	ml
Net Volume:	<u>28.0</u>	ml	<u>24.0</u>	ml	<u>28.0</u>	ml
Total H <sub>2</sub> O:						

## Silica Gel

Final Volume:	<u>466.3</u>	g	<u>460.0</u>	g	<u>470.7</u>	g
Initial Volume:	<u>456.5</u>	g	<u>452.0</u>	g	<u>462.0</u>	g
Net Volume:	<u>10.8</u>	g	<u>12.0</u>	g	<u>8.7</u>	g
Total Moisture:	<u>38.8</u>			<u>36.6</u>		
				<u>36.7</u>		

Description of Impinger Catch: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



## CONTINUOUS ANALYZER DAILY DATA

Plant: CNG 77064 Run: #2-1  
 Date: 10-12-89 Pollutant: O<sub>2</sub>  
 Operator: Strip Chart Sample Size:  
 Recorder Type: Analyzer Serial No.:  
 Inst. Span Range: Analyze Model:  
 Span Gas Conc.: 0 6 10 20.8  
 Meter/Recorder Reading: 4.5 3.1 5.6 59.5  
 1 4.5 56.5  
 2 4.5 56.5  
 3 4.5 56.5

## CALIBRATION (SCALE FACTOR/LINEAR REGRESSION, ETC.)

Time HR:MIN	Chart Reading	Scale Factor	% error	Time HR:MIN	Chart Reading	Scale Factor	% error
Run 3							
1325	66.5	14	14.9	1730	6.7		
1330	66.5		14.9	1735	6.7		
1335	66.5		14.9	1740	6.7		
1340	66.5		14.9	1745	6.7		
1345	66.5		14.9	1750	6.7		
1350	66.5		14.9	1755	6.7		
1355	66.5		14.9	1800	6.7		
1400	66.5		14.9	1805	6.7		
1405	66.5		14.9	1810	6.5		
1410	6.7		15.21	1815	6.7		
1415	6.7		15.21	1820	6.7		
1420	66.5		14.9	1825	6.7		
425	66.5		14.9	1830	6.7		14.99
Run 2							
1545	66.5						
1550	66.5						
1555	66.5						
1600	66.5						
1605	66.5						
1610	6.7						
1615	6.7						
1620	66.5						
1625	66.5						
1630	66.5						
1635	66.5						
1640	66.5						
1645	66.5						
	66.50		14.99				

10

CONTINUOUS ANALYZER DAILY DATA

Plant: CNOB 71004 Run: #2-1  
Date: 10-12-89 Pollutant: CO<sub>2</sub>  
Operator: Sample Size:  
Strip Chart Analyzer Serial No.:  
Recorder Type: Analyze Model:  
Inst. Span Range: Output Signal Format:  
Span Gas Conc.: 25 10 15  
Meter/Recorder Reading: 4 36.45 65.5 96

CALIBRATION (SCALE FACTOR/LINEAR REGRESSION, ETC.)

CONTINUOUS ANALYZER DAILY DATA

Plant: CNG TIGER Run: #2-1  
 Date: 10-12-89 Pollutant: CO  
 Operator: Sample Size:  
 Strip Chart Analyzer Serial No.:  
 Recorder Type: Analyze Model:  
 Inst. Span Range: Output Signal Format:  
 Span Gas Conc.: 25 59.3 161 804  
 Meter/Recorder Reading: 1.5 15.5 25.5 75  
 1.5 25  
 2.5 25.5

CALIBRATION (SCALE FACTOR/LINEAR REGRESSION, ETC.)

Time HR:MIN	Chart Reading	Scale Factor	ppm	Time HR:MIN	Chart Reading	Scale Factor	ppm
12 31	46.9			Run 3			
13 04							
13 25	46			1730	47.5		
13 30	46.5			1735	48		
13 35	46.5			1740	47.5		
13 40	46.5			1745	47		
13 45	47.5			1750	47		
13 50	46			1755	47		
13 55	46.5			1800	46		
14 00	46.5			1805	47		
14 05	46			1810	46.5		
14 10	46.5			1815	47		
14 15	46			1820	47		
14 20	46.5			1825	46.5		
14 25	46.5			1830	47		
15 45	46.5						235.51
15 50	46.5						
15 55	46						
16 00	47						
16 05	47						
16 10	47.5						
16 15	46.5						
16 20	46						
16 25	47						
16 30	47.5						
16 35	47						
16 40	46						
16 45	46						
	46.95						
			235.90				

CONTINUOUS ANALYZER DAILY DATA

Plant: CNG Plant Run: # 2-1  
Date: 10-10-89 Pollutant: NOx  
Operator: Strip Chart Sample Size:  
Recorder Type:  Analyzer Serial No.:  
Inst. Span Range:  Analyze Model:  
 Output Signal Format:

Span Gas Conc.:	0	100 ppm	250	300
Meter/Recorder Reading:	0	100	250	300
	0	100	250	300

CALIBRATION (SCALE FACTOR/LINEAR REGRESSION, ETC.)

CONTINUOUS ANALYZER DAILY DATA

Plant: CNG Tioga Run: #2-1  
 Date: 10-12-89 Pollutant: CH<sub>4</sub>  
 Operator: Sample Size:  
 Strip Chart Analyzer Serial No.:  
 Recorder Type: Analyze Model: Carlo 211  
 Inst. Span Range: Output Signal Format:  
 Span Gas Conc.: 50 50% 100% 2010  
 Meter/Recorder Reading: 2 15.5 58 55.5

CALIBRATION (SCALE FACTOR/LINEAR REGRESSION, ETC.)

Time HR:MIN	Chart Reading	Scale Factor	Time HR:MIN	Chart Reading	Scale Factor	ppm
1325	23.75	422.3	RHN #3			
1330	24	421.2				
1335	23.5	422.3	1730	25		
1340	23.5	422	1735	25		
1345	24	421.2	1740	25.5		
1350	23.5	422.3	1745	25.5		
1355	23	421.4	1750	24.2		
1400	23.75	422.3	1755	25		
1405	23.5	422.3	1800	25		
1410	23.75	422.3	1805	25		
1415	23.5	422.3	1810	24.5		
1420	23.25	421.4	1815	25		
1425	23.5	422.3	1820	25		
			1825	25		
			1830	25.5		
						860.13
1545	24.5					
1550	24.5					
1555	24.5					
1600	25					
1605	24.5					
1610	25					
1615	24.5					
1620	24.5					
1625	24.5					
1630	25					
1635	25					
1640	25.5					
1645	25.5					
	24.91	457.68				

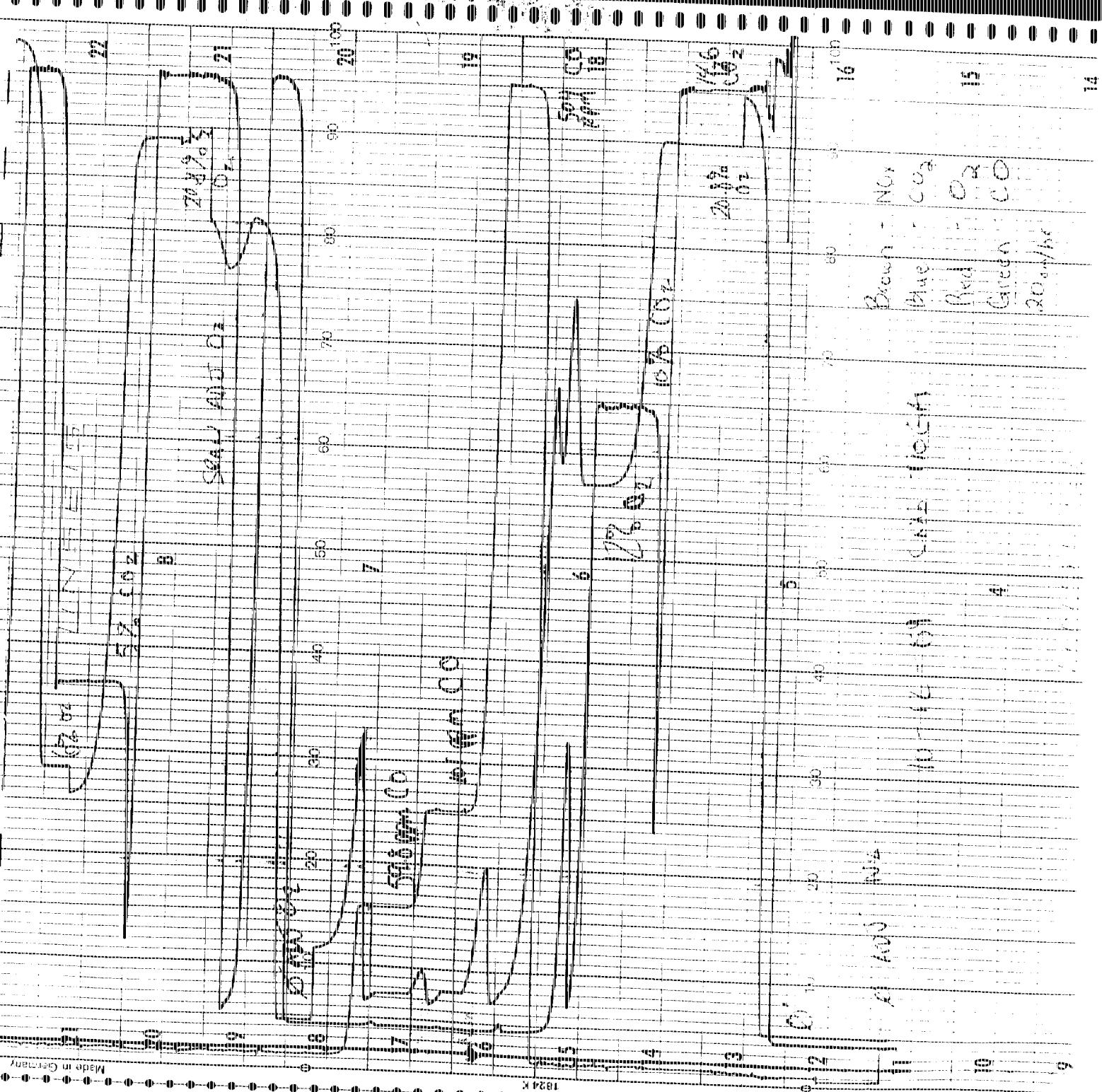
*F-10*

## CONTINUOUS ANALYZER DAILY DATA

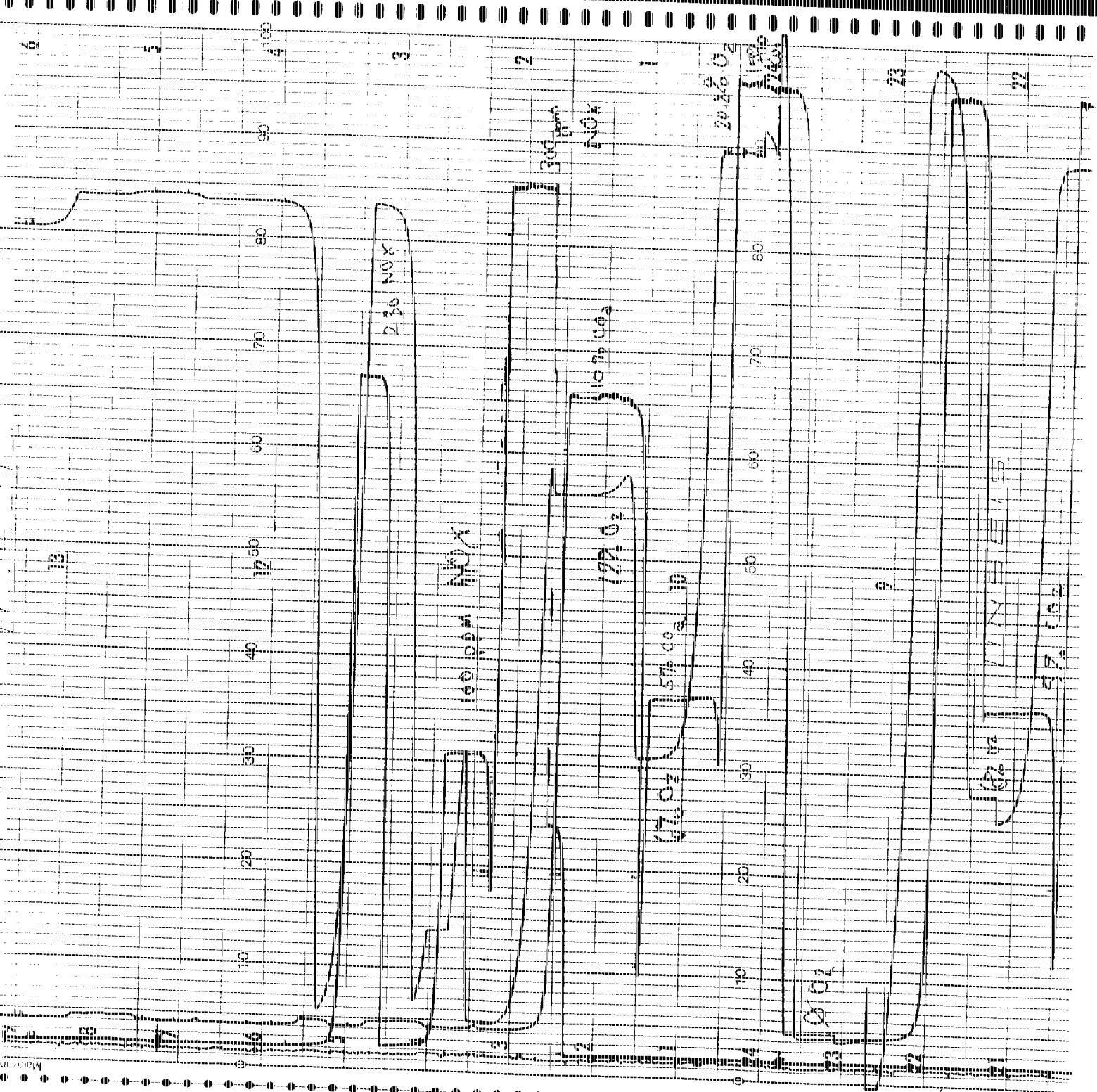
Plant: CNG T-19604 Run: #2 - 1  
 Date: 10-12-89 Pollutant: TWC (as C<sub>4</sub>H<sub>8</sub>)  
 Operator:  Sample Size:   
 Strip Chart:  Analyzer Serial No.:   
 Recorder Type:  Analyze Model:   
 Inst. Span Range:  Output Signal Format:   
 Span Gas Conc.: 2% Scale 4001 42410  
 Meter/Recorder Reading: 5.5 27 48.5 93.5  
3 5.5 49.0  
3 5.5 49.0

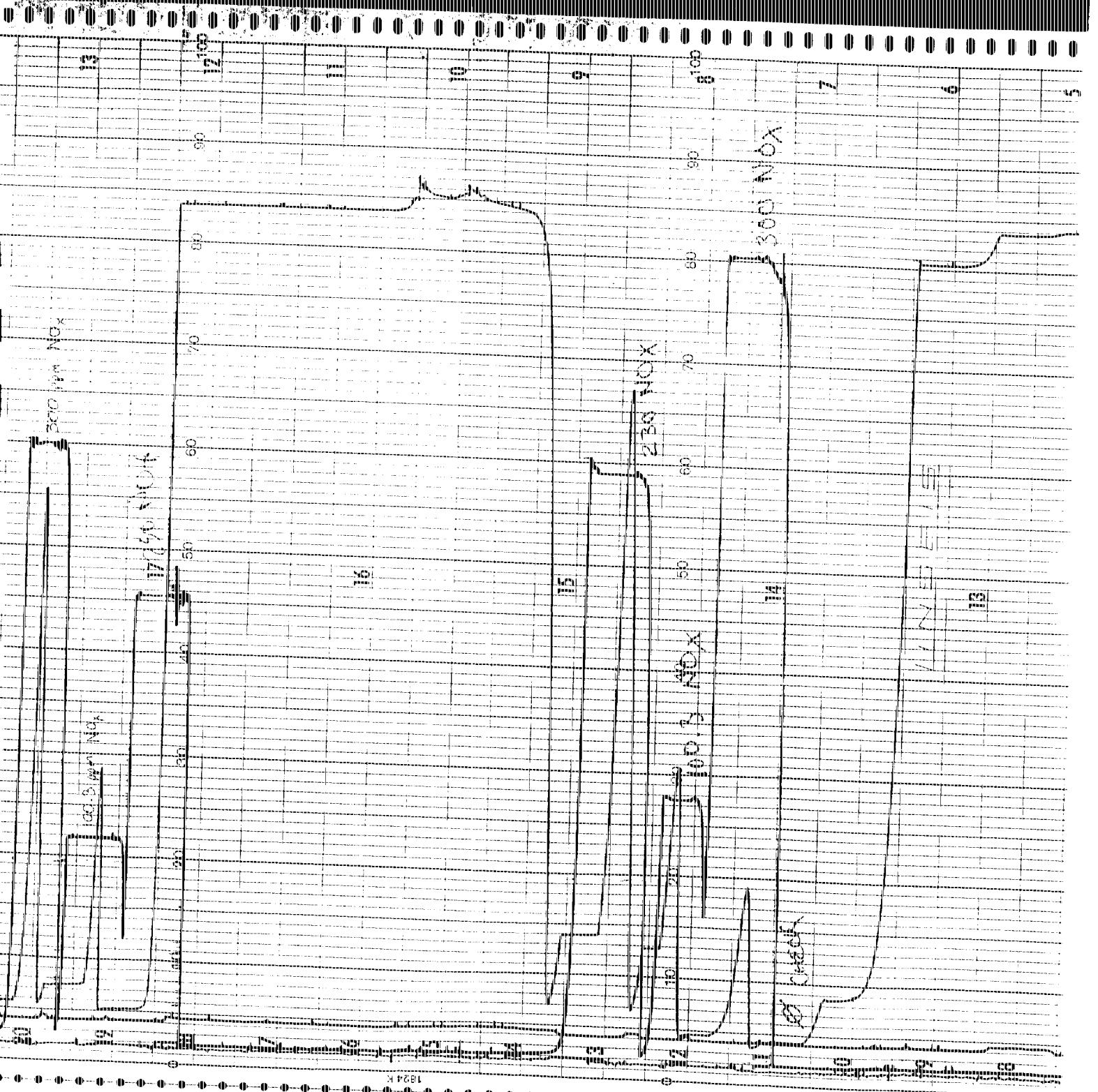
CALIBRATION (SCALE FACTOR/LINEAR REGRESSION, ETC.)  
3) 5.5 50.0

Time HR:MIN	Chart Reading	Scale Factor	Time HR:MIN	Chart Reading	Scale Factor
		ppm			ppm
<u>Run 3</u>					
1325	43.5		1730	44	
1330	43.5		1735	44	
1335	42.5		1740	43	
1340	42.5		1745	43.5	
1345	43		1750	44	
1350	43		1755	43.5	
1355	43		1800	43	
1400	44		1805	43.5	
1405	43.5		1810	42.5	
1410	43.5		1815	44	
1415	43.5		1820	44	
1420	43		1825	42.5	
1425	42.5		1830	44	
	<u>43.5</u>	<u>869.4</u>			
					<u>43.58</u> <u>871.20</u>
<u>Run #2</u>					
1545	42.5				
1550	42.5				
1555	43.5				
1600	43				
1605	43.5				
1610	43				
1615	43.5				
1620	42.5				
1625	43				
1630	44				
1635	42.5				
1640	44				
1645	44				
	<u>43.19</u>	<u>866.15 + 7.2% Moisture</u>			

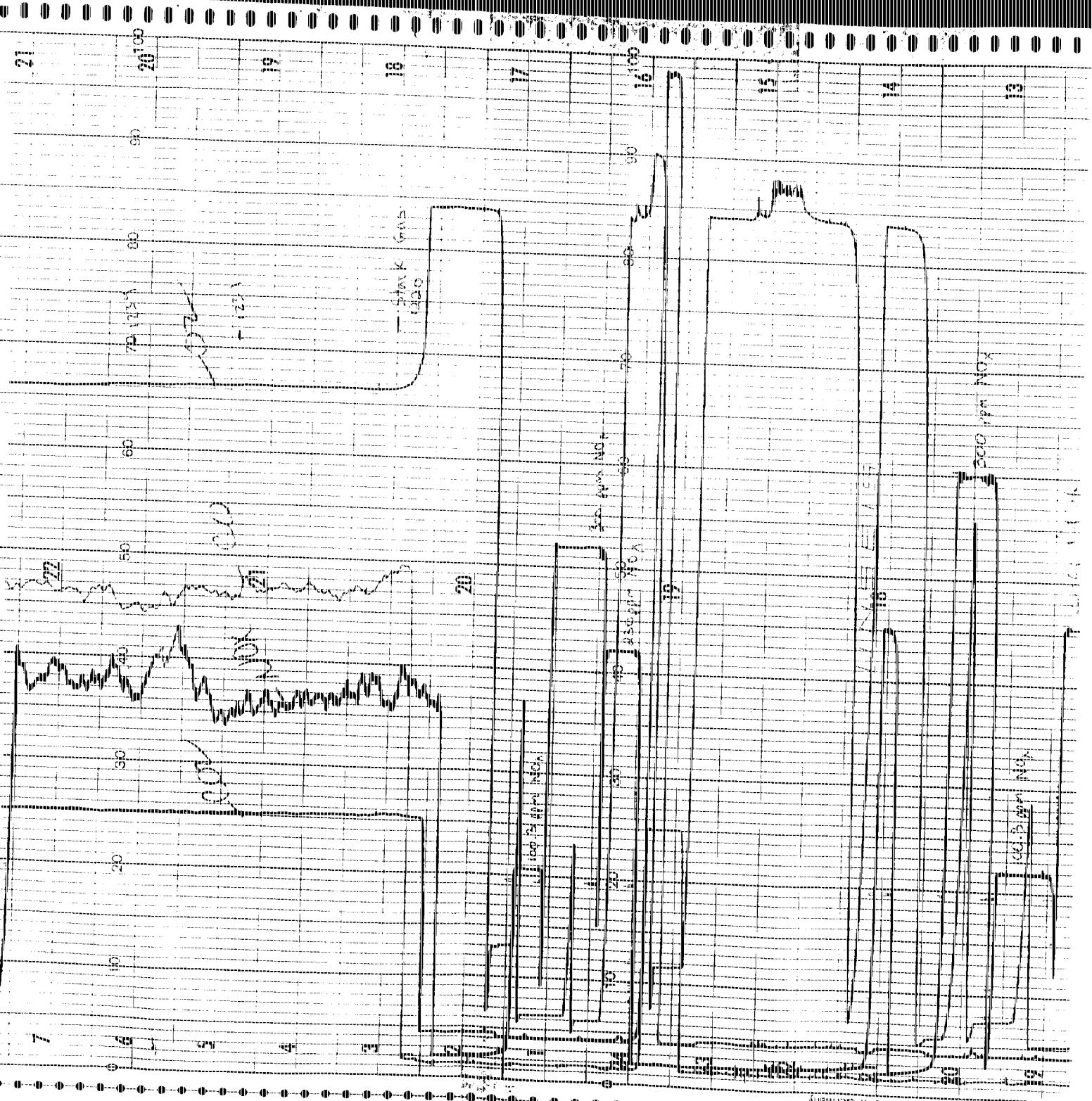


B-14

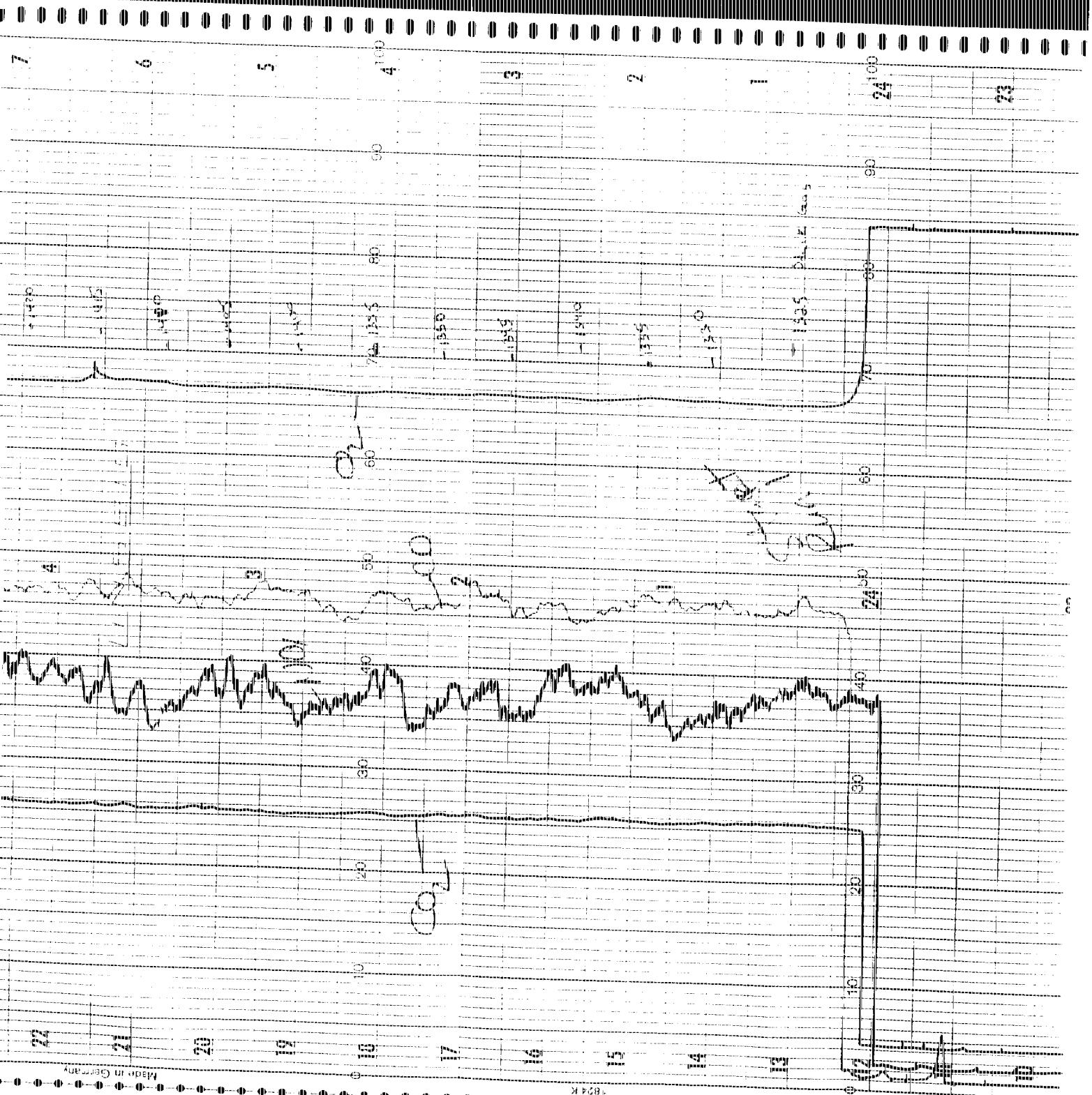




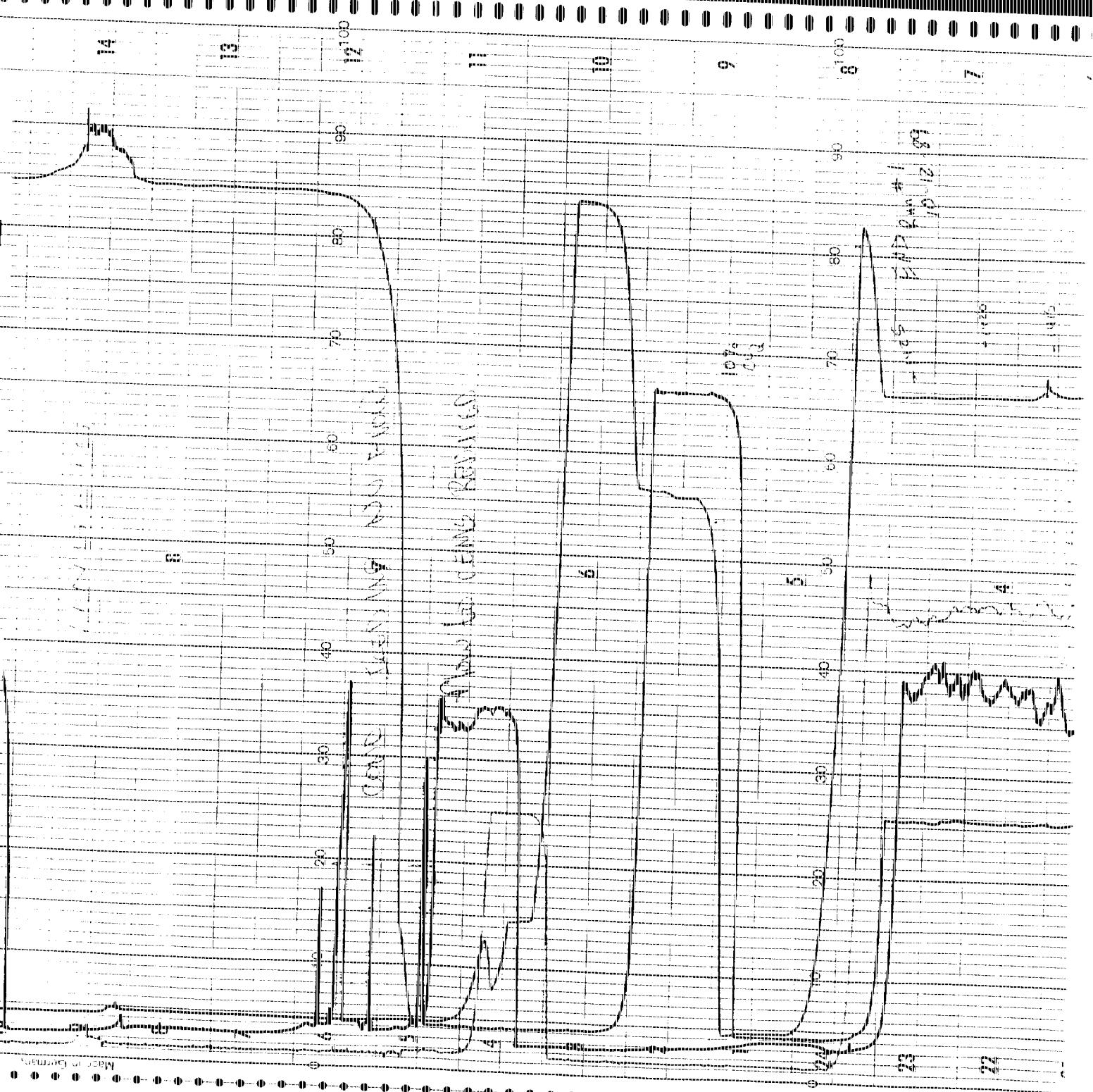
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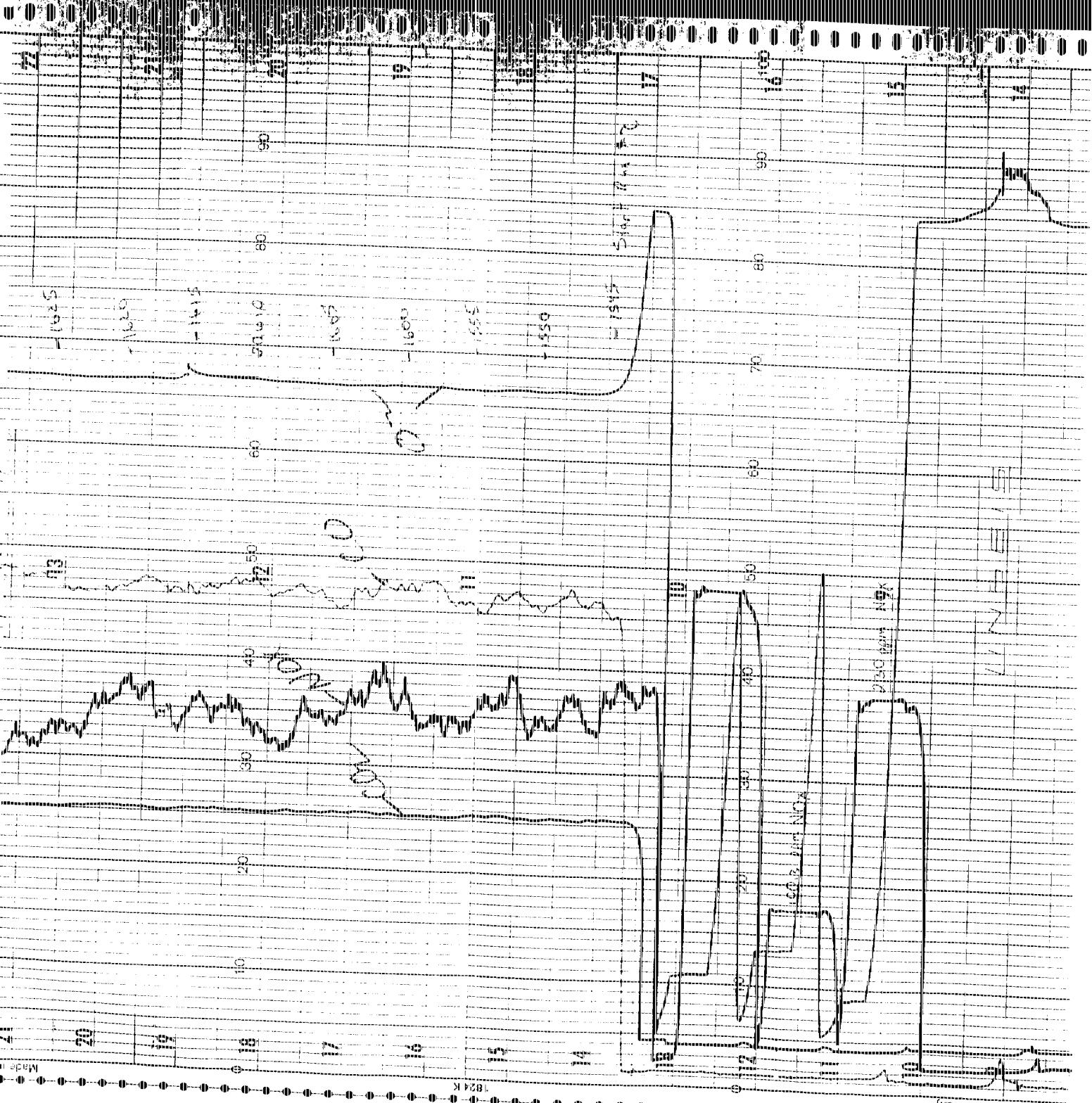
B-17



B-18



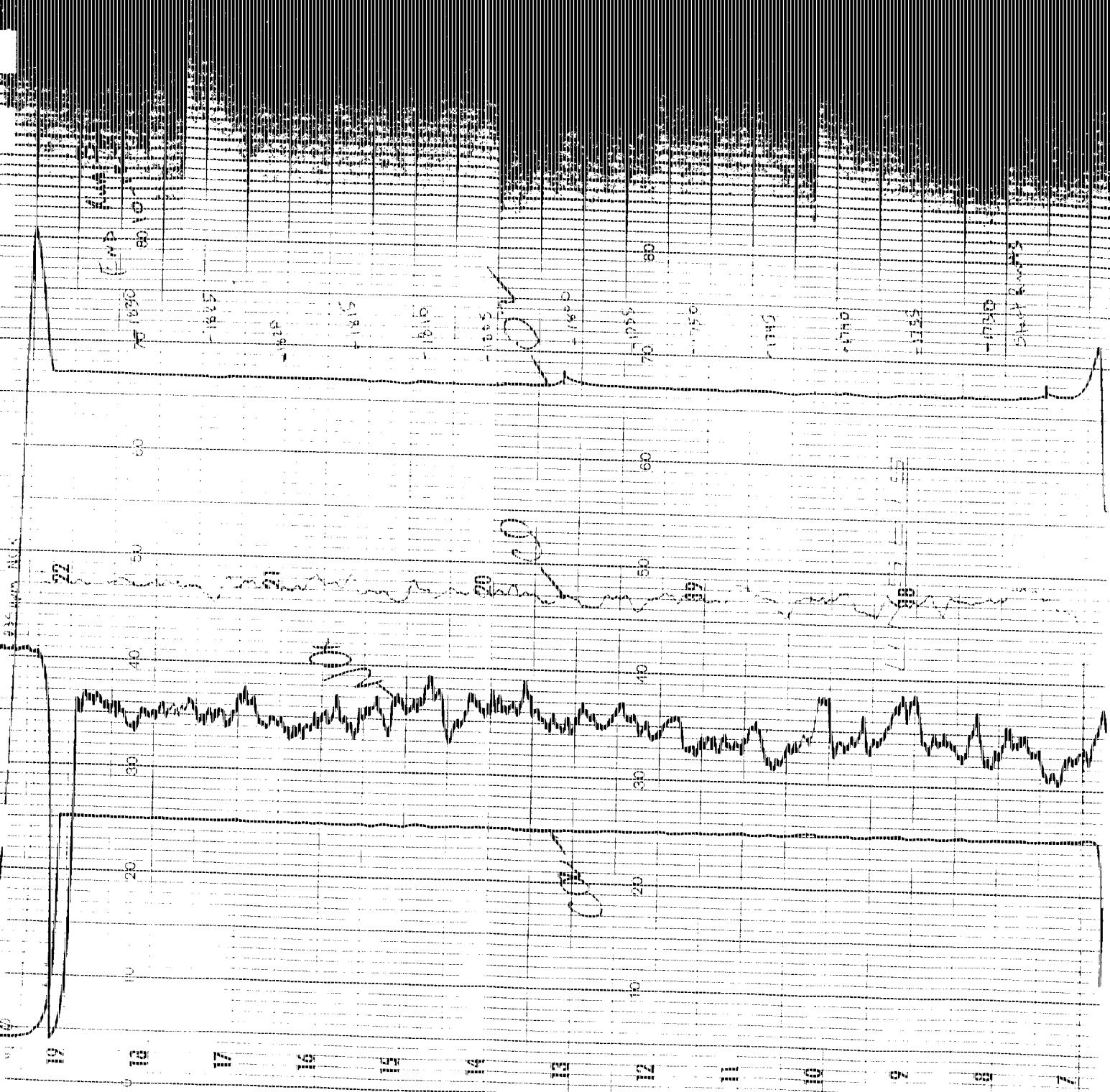
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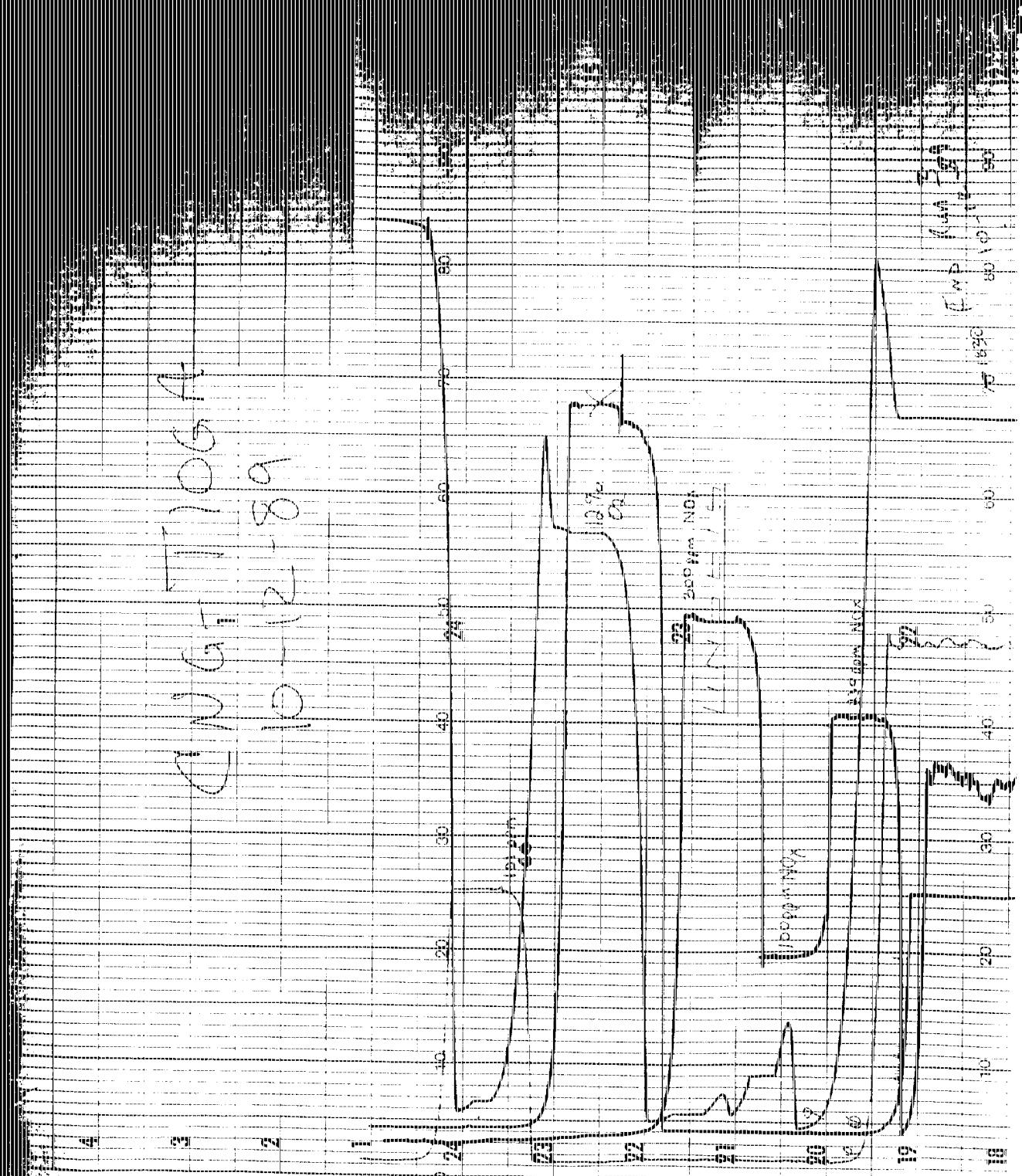


B-20



E-21





B-23

10-7-59  
C-6 + 10-2-A  
100% 100% 100%

50% 70% 40%  
50% 70% 40%

100% CM

100% CM  
100% CM

40%

60%

80%

100%

120%

140%

160%

180%

200%

220%

240%

260%

280%

300%

320%

340%

360%

380%

400%

420%

440%

460%

480%

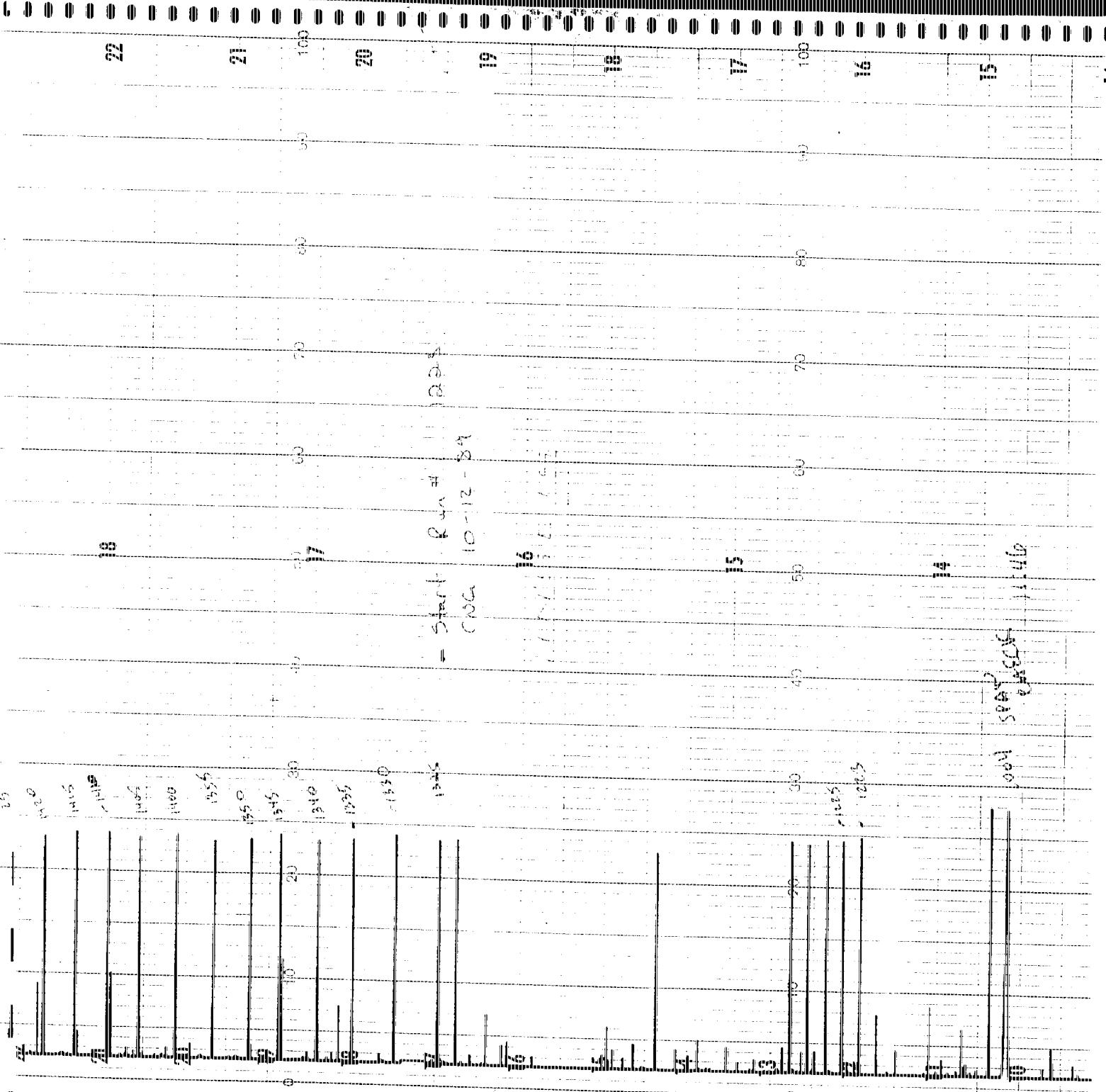
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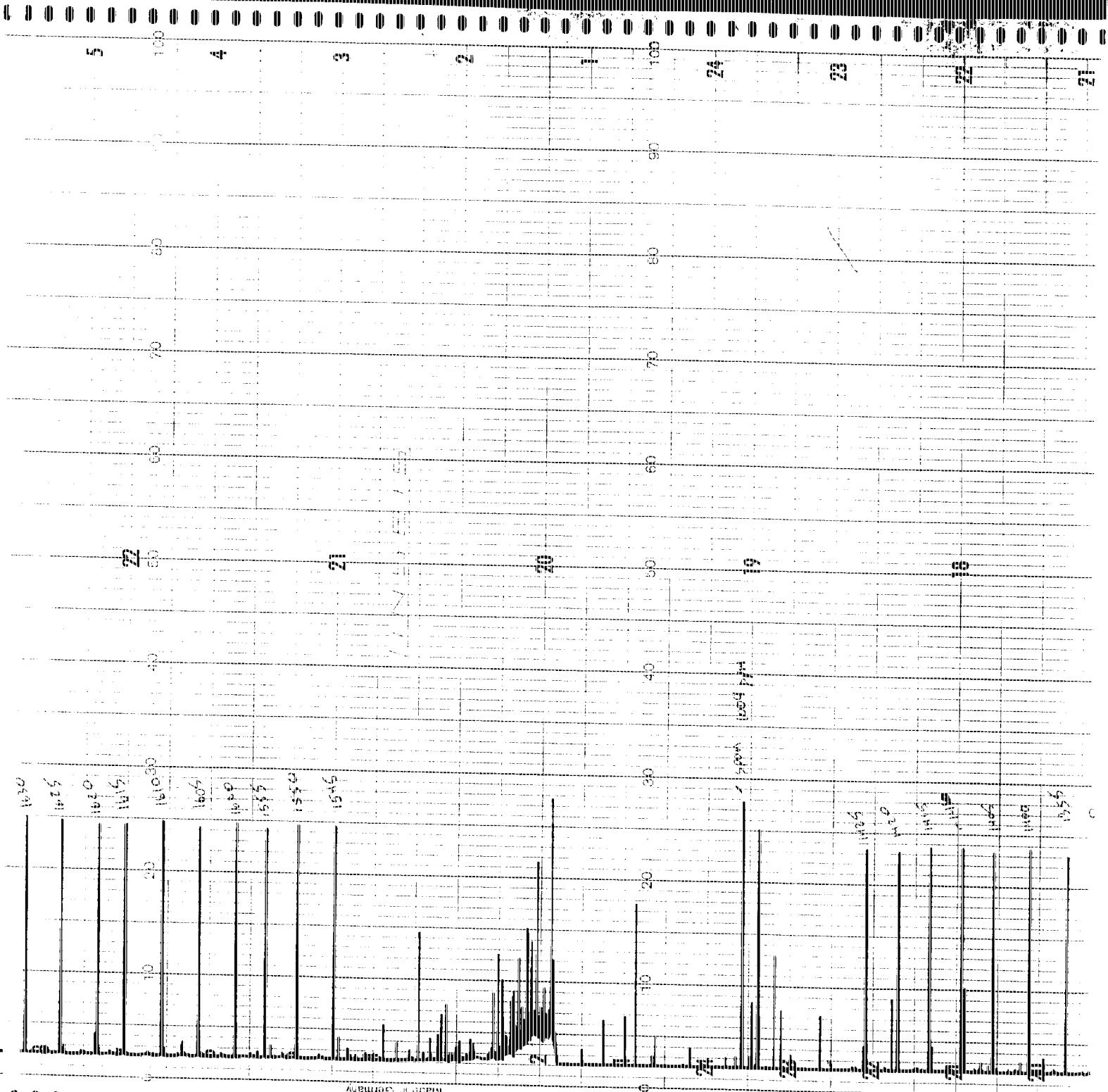
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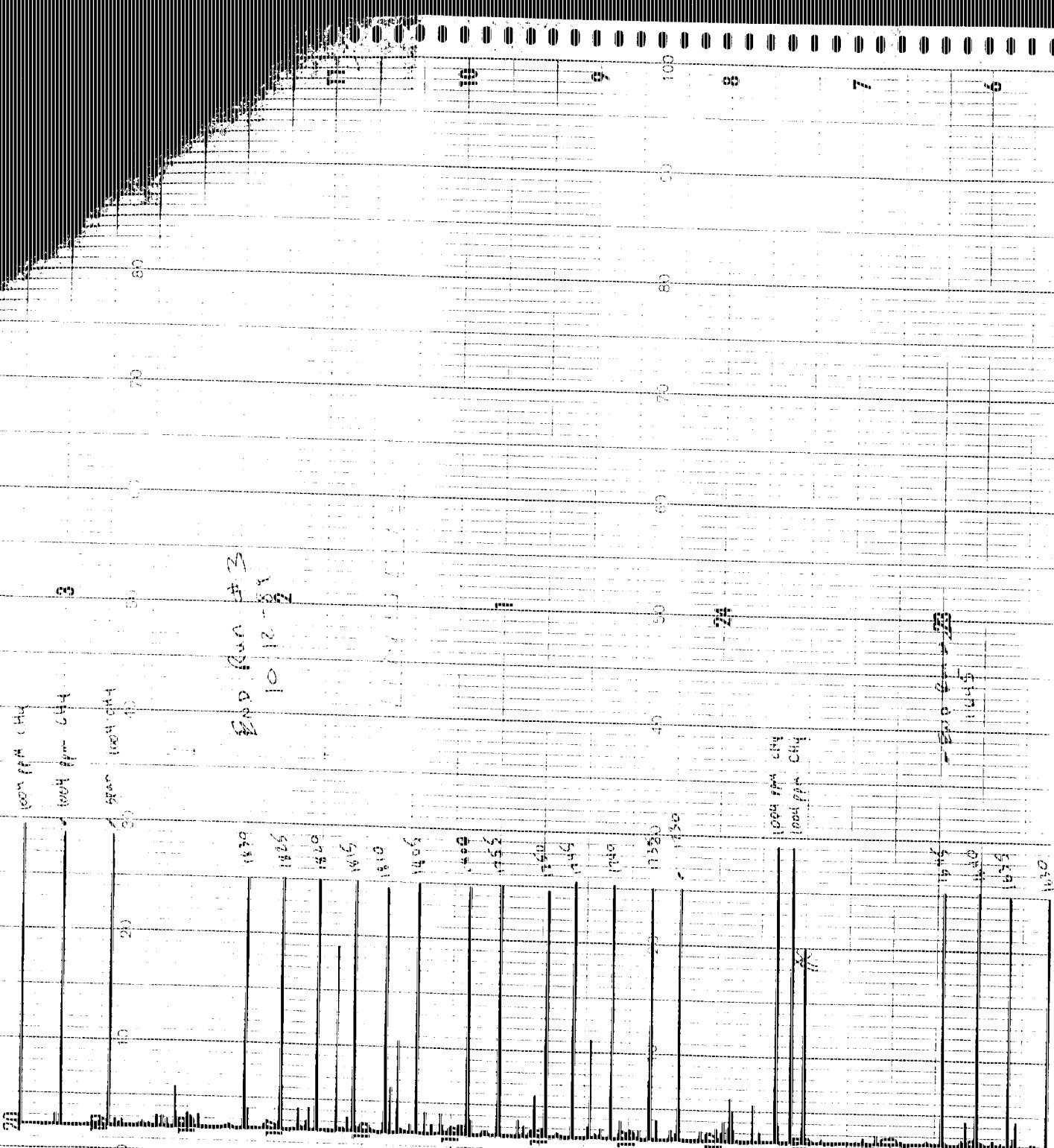
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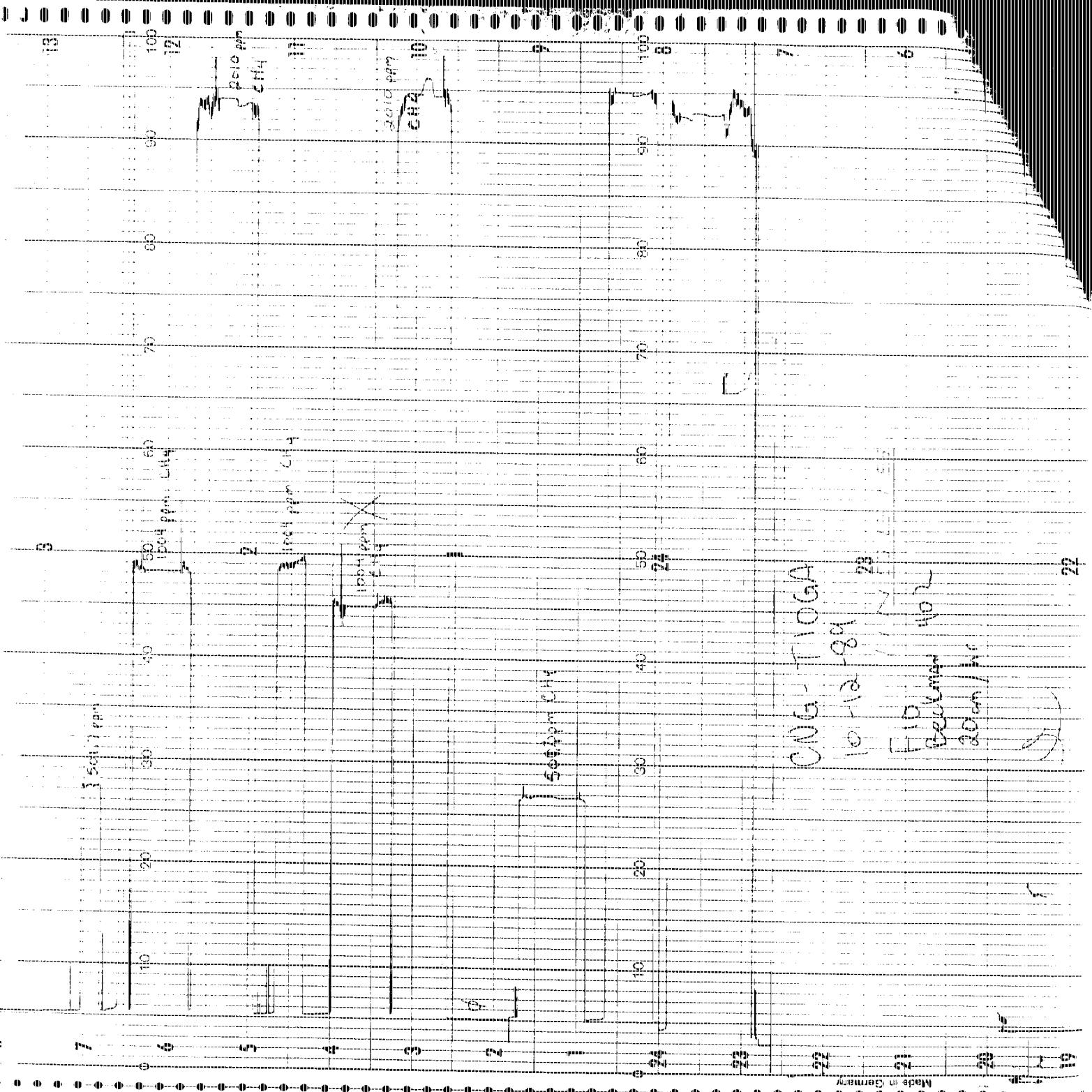
B-25

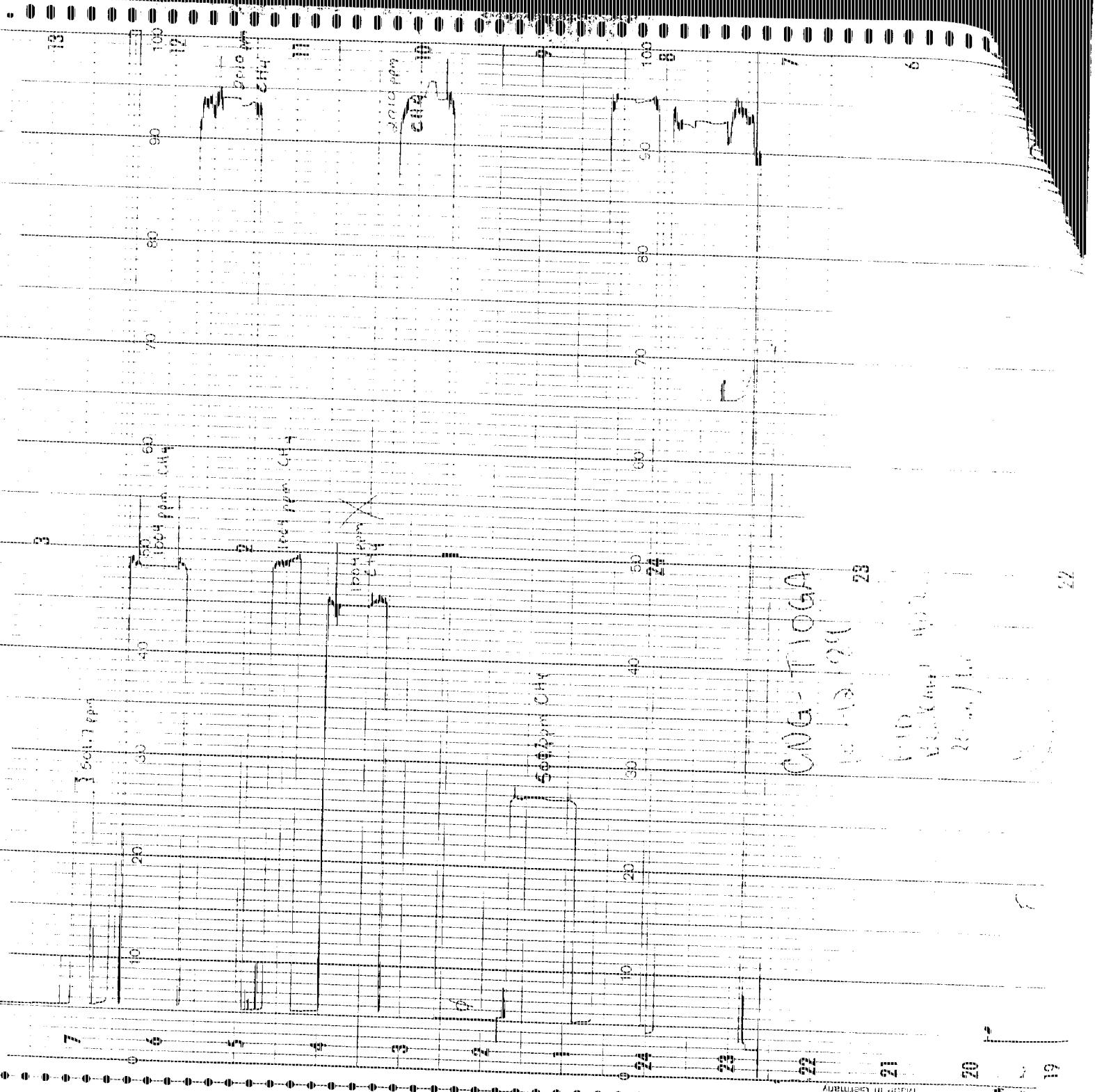


B-26

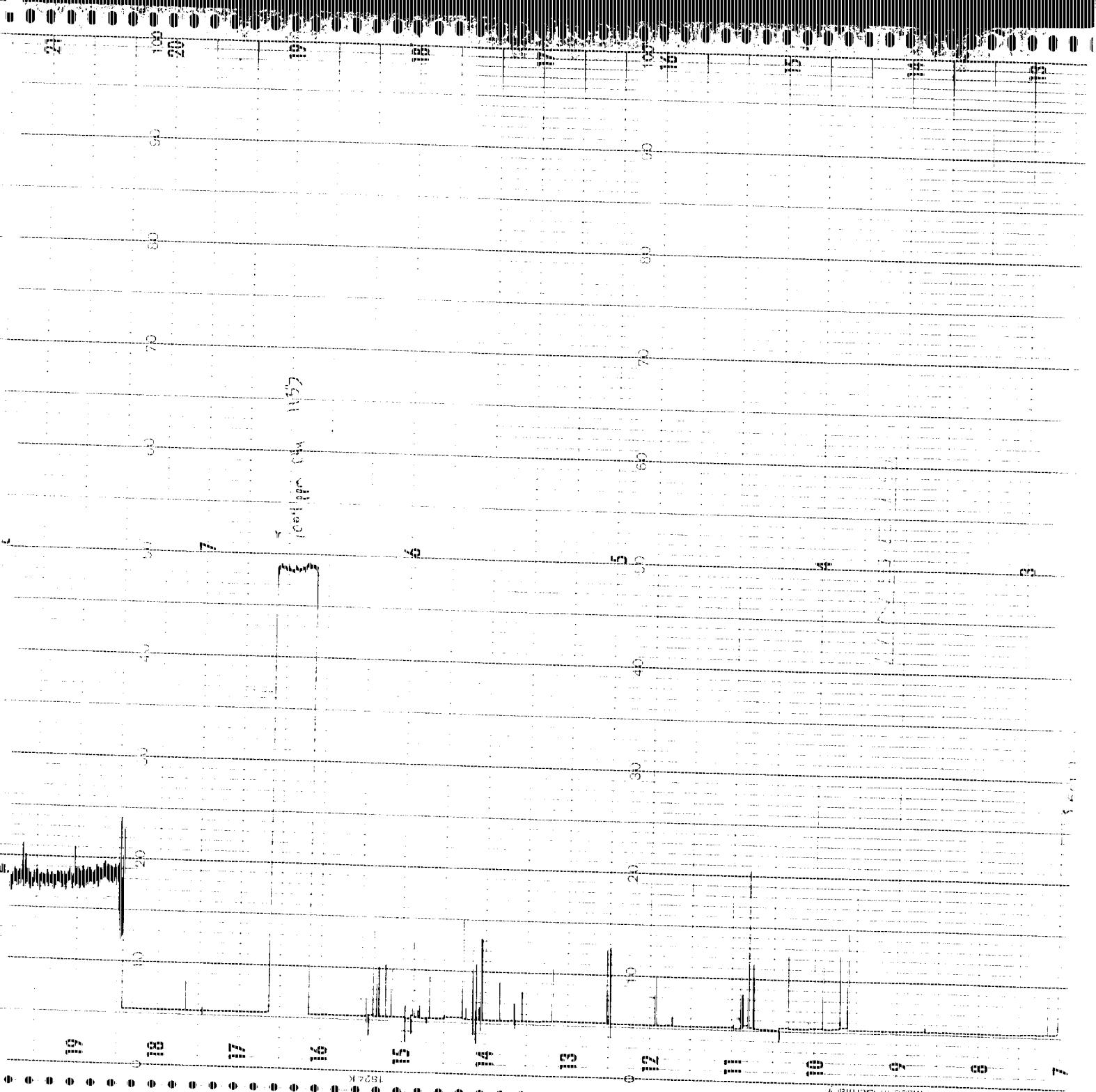


B-27

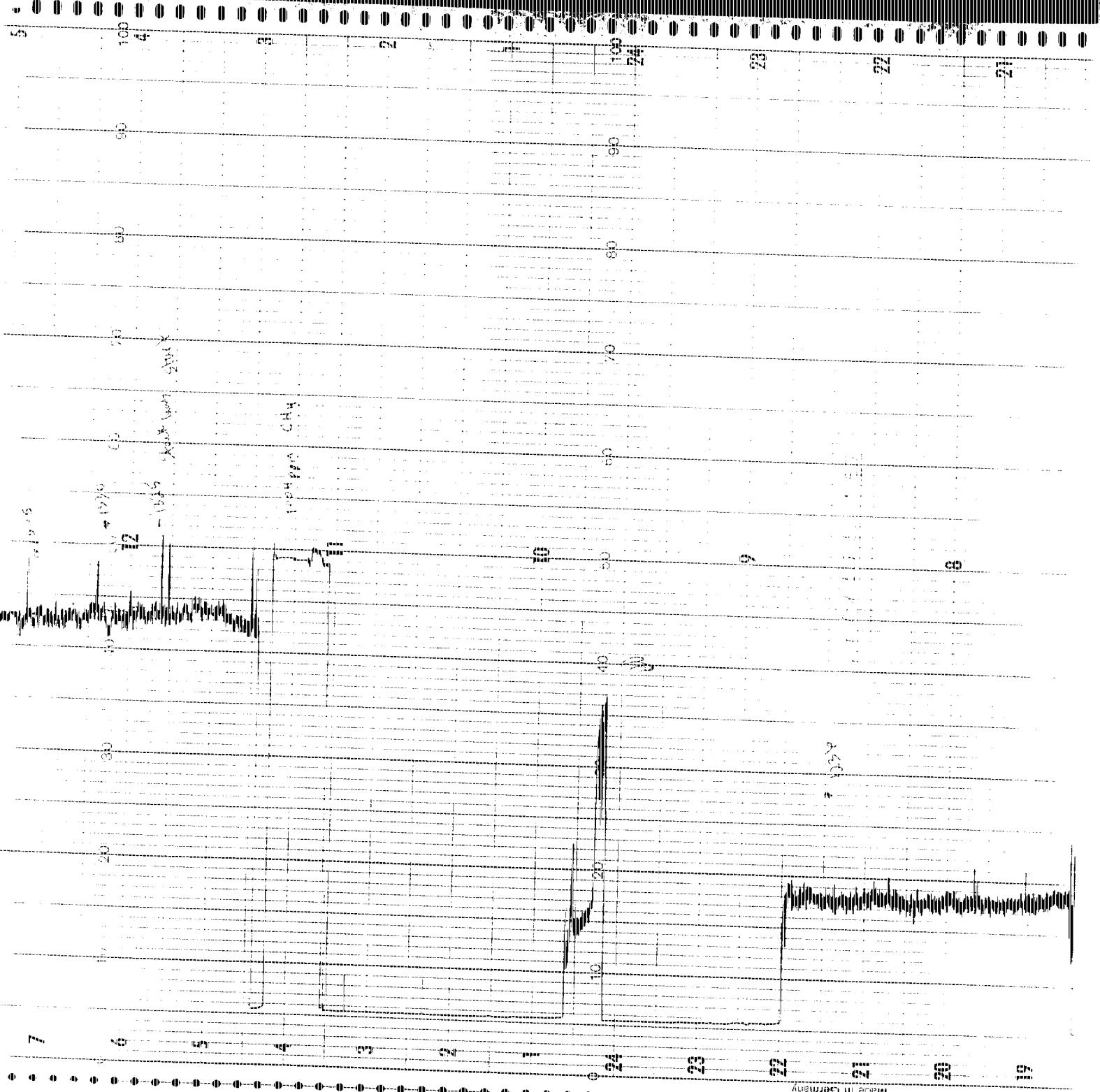




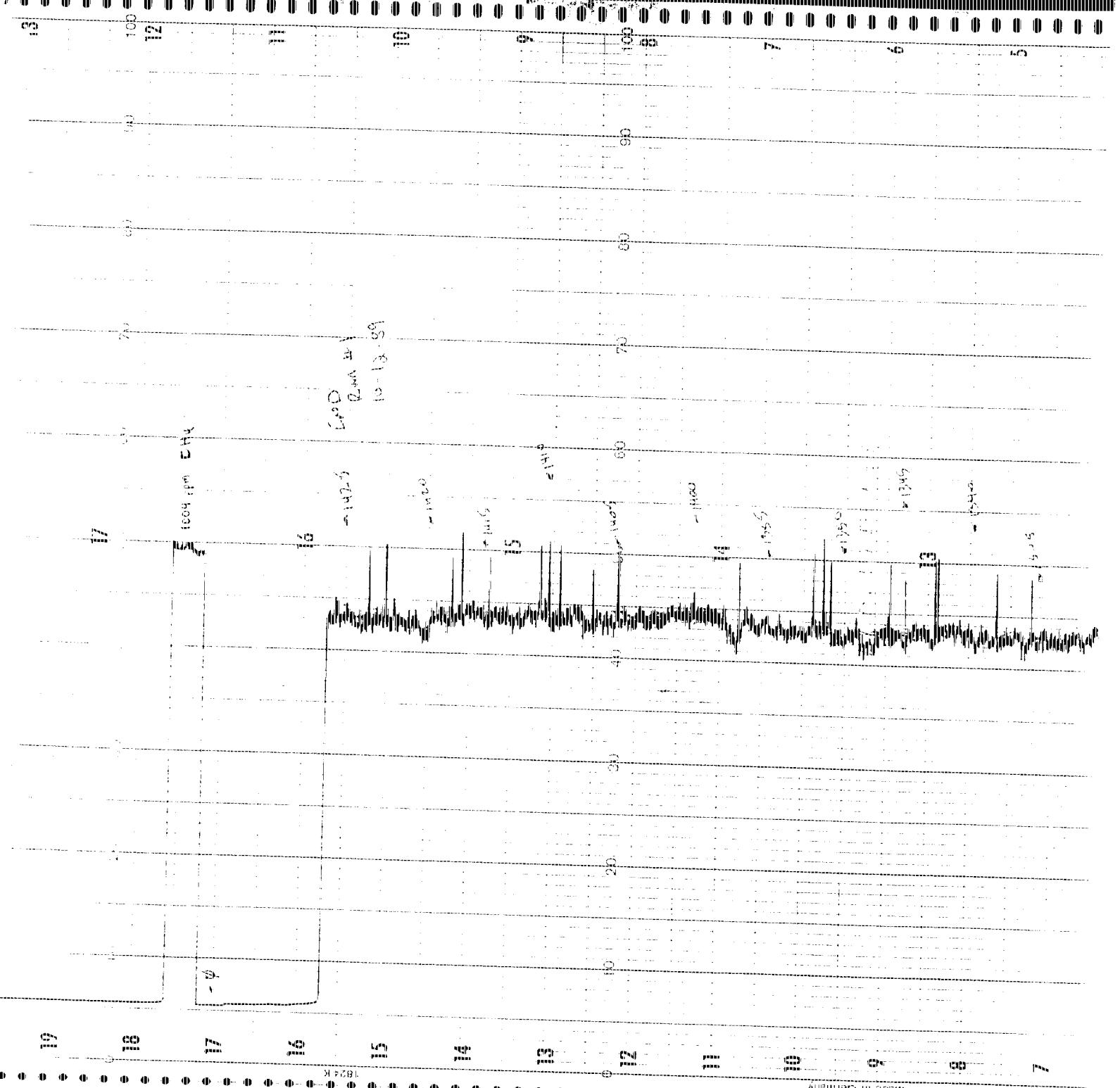
B-29



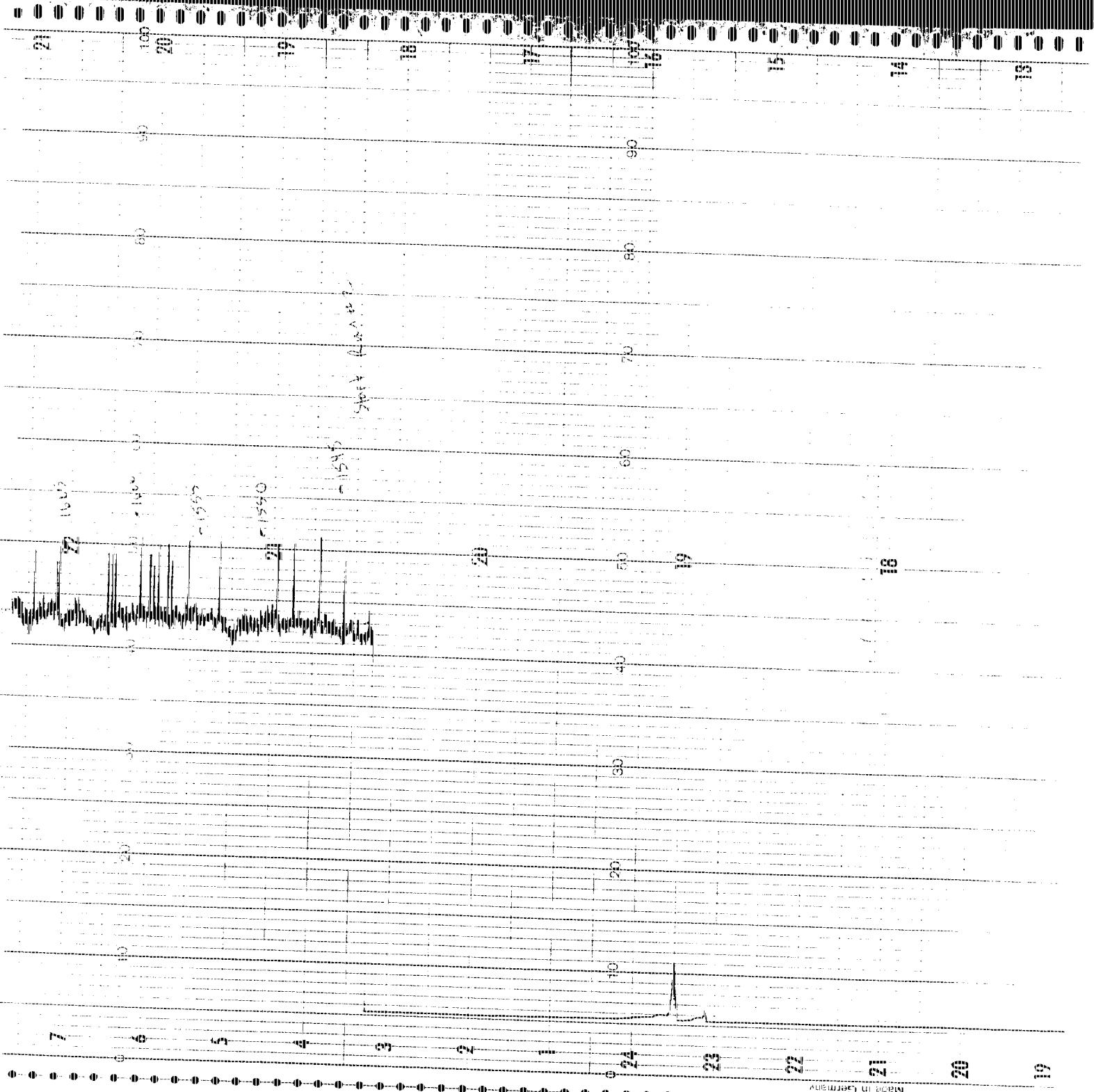
B-30



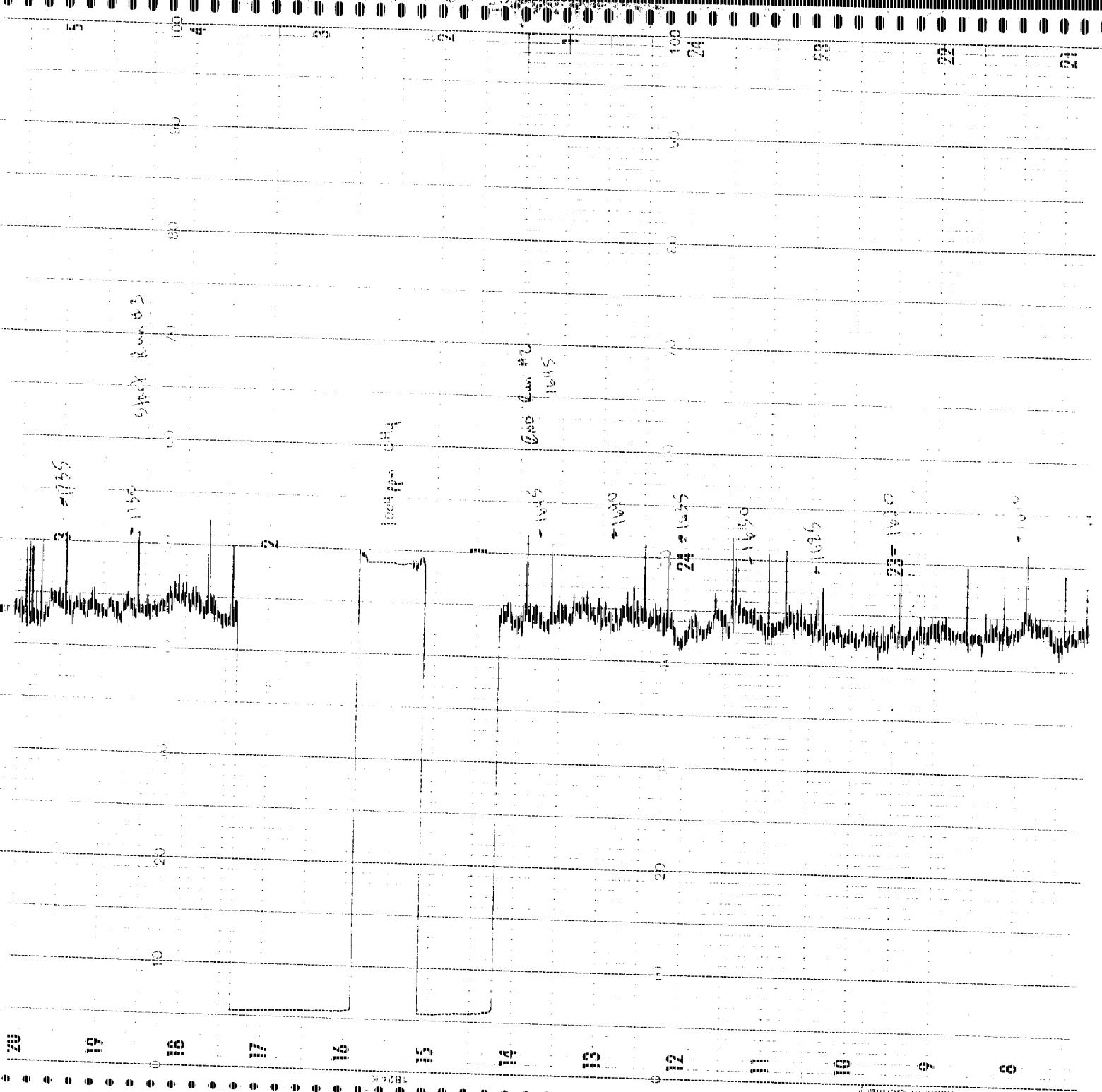
B-31



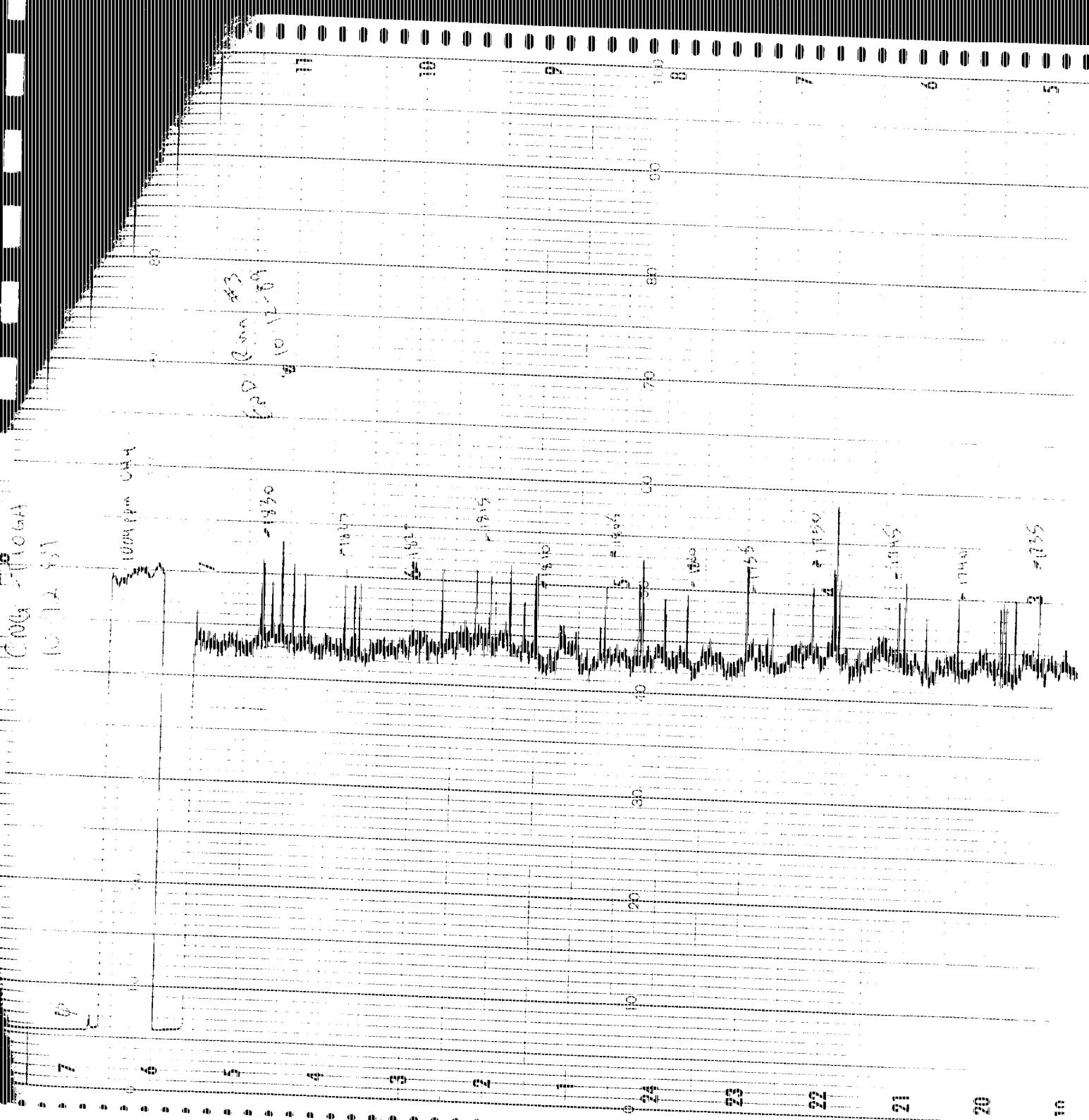
B-32



B-3.3



B-34



APPENDIX C

ENGINE NO. 1 CALCULATIONS AND SUMMARIES



1945年1月25日，蘇聯軍隊進駐北平，蔣介石被迫簽訂《雙十停戰協定》，並在北平召開國民政府委員會會議，蔣介石被推舉為總理。

19. The following table shows the number of hours worked by each employee.

19. The following is a list of the names of the members of the Board of Education of the City of New York, and their term of office.



10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31.

1946. 10. 27. 22:00  
1946. 10. 28. 00:00

וְיָמֵינוּ בְּבִירַעַת אֶלְעָזָר וְבְבִירַעַת שְׁמֹנָה וְבְבִירַעַת כְּלָמִידָה וְבְבִירַעַת כְּלָמִידָה

19. *Leucosia* *leucostoma* *leucostoma* *leucostoma* *leucostoma* *leucostoma*

For the first time in history, the world's population has reached 7 billion.

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ANSWER: ANSWER ANSWER ANSWER ANSWER

G. D. GIL

For the first time, we have shown that the *in vitro* growth of *Candida albicans* biofilms can be inhibited by the addition of *in vivo* active metabolites of the antifungal agent.

10. The following table shows the number of hours worked by each employee.

19. The following table shows the number of cases of smallpox reported in each State during the year 1802.

1. The first step in the process of creating a new product is to identify a market need.

19. *Leucosia* *leucostoma* *leucostoma* *leucostoma* *leucostoma*

For more information about the National Institute of Child Health and Human Development, please go to the NICHD Web site at [www.nichd.nih.gov](http://www.nichd.nih.gov).

1. *Leucosia* *leucostoma* *leucostoma* *leucostoma*  
2. *Leucosia* *leucostoma* *leucostoma* *leucostoma*

10. The following table shows the number of hours worked by each employee.

תְּמִימָנָה

（三）在本行的存单、存折上，不得用铅笔填写或划线，以免损坏存单、存折。

1973-1974  
Yearly Summary

1996-1997 学年第一学期

1937-38-39

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10. The following table gives the number of hours worked by each of the 100 workers.

U.S. EPA  
PARTICULATE CALCULATIONS  
RUN NO. #1-C

PLANT : CNG TIOGA STATION

DATE : 10-17-89

SAMP. LOCATION : ENGINE #1 OUTLET STACK  
OPERATING COND.: COMPLIANCE

|                 |   |       |        |               |   |          |         |
|-----------------|---|-------|--------|---------------|---|----------|---------|
| SAMPLE TIME     | = | 60.0  | min.   | NOZZLE DIA.   | = | ***      | in.     |
| BAR. PRESSURE   | = | 27.97 | in.Hg  | NOZZLE AREA   | = | 0 Sq.Ft. |         |
| STK. PRESSURE   | = | 27.94 | in.Hg  | METER ORIFICE | = | 0.500    | in. H2O |
| EFF. STACK AREA | = | 8.08  | Sq.Ft. | METER VOLUME  | = | 25.160   | Qu.Ft.  |
| Cp              | = | 0.84  |        | METER TEMP.   | = | 522      | DEG. R  |
| GAS ANALYSIS    | = | 3.2   | % CO2  | STACK TEMP.   | = | 975      | DEG. R  |
|                 |   | 15.2  | % O2   | SQ.RT. dP     | = | 0.945    | in. H2O |
|                 |   | 0.0   | % CO   | COND. (Vic)   | = | 26.3     | ml      |
| LAB ANALYSIS    | = | 81.6  | % N2   | METER Y       | = | 0.998    |         |
|                 |   | ***** | grams  |               |   |          |         |

\*\*\*\*\* = \*\*\*\*\*

$$Vw(\text{std}) = 0.04707 \times Vic = 1.238 \text{ scf}$$

$$Vm(\text{std}) = 17.647 \times Vm \times Y \times (Pb + (dH / 13.6)) / (Tm) = 23.656 \text{ scf}$$

$$Bws = Vw(\text{std}) / (Vm(\text{std}) + Vw(\text{std})) = 0.050$$

$$\%EA = (\%O2 - 0.5\%CO) / (0.264\%N2 \times (\%O2 - 0.5\%CO)) = 0.046$$

$$Md = (.44 \times \%CO2) + (.32 \times \%O2) + [.28 \times (\%N2 + \%CO)] = 29.12$$

$$Ms = (Md \times (1-Bws)) + (18.0 \times Bws) = 28.57$$

$$vs = 65.49 \times CP \times (Sq.Rt.dP) \times (Sq.Rt.(Ts) / (Ms \times Ps)) = 75.0 \text{ ft/sec}$$

$$Qs = vs \times As \times 60 = 36389 \text{ acf/min}$$

$$Qs(\text{std}) = Qs \times (1-Bws) \times (528 / (Ts)) \times (Ps / 29.92) = 17484 \text{ dsacf/min}$$

$$I = (Ts) \times ((0.00267 \times Vic) + (Vm(\text{std}) / 17.647)) \times 100 / (Time \times Ps \times Ar \times vs \times 60) = ERR %$$

$$CS = 15.432 \times \text{grams} / Vm(\text{std}) = 0.0000 \text{ grains/dscf}$$

$$CS (\text{adjusted to } 7\% \text{ O2}) = CS \times 14.21 - 0.2(\text{orsat}) = 0.0000 \text{ gr/dscf } 7\%$$

$$\text{grains/acf} = cs \times 17.647 \times Ps \times (1-Bws) / (Ts) = 0.0000 \text{ grains/dscf}$$

$$C = CS / 7000$$

$$EM (\text{Grams/minute}) = (\text{grams}/Vm(\text{std})) \times Qs(\text{std}) = 0.00E+00 \text{ lbs/dscf}$$

$$EM = C \times Qs(\text{std}) \times 60 = 0.0000 \text{ grams/min} = 0.000 \text{ lbs/hr}$$

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19. *Leucosia* *leucostoma* *leucostoma* *leucostoma*  
20. *Leucosia* *leucostoma* *leucostoma* *leucostoma*

וְעַתָּה תִּשְׁמַח אֶת-בְּנֵי יִשְׂרָאֵל וְעַתָּה תִּשְׁמַח אֶת-בְּנֵי יִשְׂרָאֵל

| NAME               | ADDRESS         | TELEPHONE | TYPE OF BUSINESS | NUMBER OF EMPLOYEES | WEEKLY PAYROLL | WEEKLY TAXES | WEEKLY PAYMENT TO FEDERAL DEBT | WEEKLY PAYMENT TO STATE DEBT | WEEKLY PAYMENT TO LOCAL DEBT |
|--------------------|-----------------|-----------|------------------|---------------------|----------------|--------------|--------------------------------|------------------------------|------------------------------|
| John Doe           | 123 Main Street | 555-1234  | Restaurant       | 10                  | \$10,000       | \$1,000      | \$200                          | \$100                        | \$100                        |
| Jane Doe           | 456 Elm Street  | 555-2345  | Restaurant       | 10                  | \$10,000       | \$1,000      | \$200                          | \$100                        | \$100                        |
| Bob Smith          | 789 Oak Street  | 555-3456  | Restaurant       | 10                  | \$10,000       | \$1,000      | \$200                          | \$100                        | \$100                        |
| Susan Smith        | 123 Elm Street  | 555-4567  | Restaurant       | 10                  | \$10,000       | \$1,000      | \$200                          | \$100                        | \$100                        |
| Tom Johnson        | 456 Main Street | 555-5678  | Restaurant       | 10                  | \$10,000       | \$1,000      | \$200                          | \$100                        | \$100                        |
| Mary Johnson       | 789 Elm Street  | 555-6789  | Restaurant       | 10                  | \$10,000       | \$1,000      | \$200                          | \$100                        | \$100                        |
| David Williams     | 123 Oak Street  | 555-7890  | Restaurant       | 10                  | \$10,000       | \$1,000      | \$200                          | \$100                        | \$100                        |
| Elizabeth Williams | 456 Main Street | 555-8901  | Restaurant       | 10                  | \$10,000       | \$1,000      | \$200                          | \$100                        | \$100                        |
| Robert Miller      | 789 Elm Street  | 555-9012  | Restaurant       | 10                  | \$10,000       | \$1,000      | \$200                          | \$100                        | \$100                        |
| Sarah Miller       | 123 Oak Street  | 555-0123  | Restaurant       | 10                  | \$10,000       | \$1,000      | \$200                          | \$100                        | \$100                        |

“*It is the first time that I have ever seen such a thing.*”

1. *Leucosia* *leucostoma* (Fabricius) *leucostoma* (Fabricius) *leucostoma* (Fabricius)

*Plates* — *Figures* — *Tables* — *Text* — *Notes* — *References* — *Index*

1920-21 - 1921-22 - 1922-23 - 1923-24 - 1924-25 - 1925-26 - 1926-27 - 1927-28 - 1928-29 - 1929-30

新編 金匱要略 卷之三十一

19. *Phragmites australis* (Cav.) Trin. ex Steud. - Common reed.

Digitized by srujanika@gmail.com

For more information about the National Institute of Child Health and Human Development, please go to the NICHD Web site at [www.nichd.nih.gov](http://www.nichd.nih.gov).

TIME OF BROADCAST - 10:00 A.M. - 12:00 NOON  
MARCH 19, 1942

“...and the Lord said unto me, ‘Go forth into all the world, and preach the gospel to every creature.’”

3. *Adaptation* is the ability of an organism to change its behavior or structure in response to environmental stimuli.

19. *Leucosia* *leucostoma* *leucostoma* *leucostoma*  
— *leucostoma* *leucostoma* *leucostoma*

122 15000 10000

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12. *Chlorophytum comosum* (L.) Willd. (Fig. 12) is a common species throughout the tropics. It has a cluster of long, narrow, linear leaves, 1-2 m. long, 1-2 cm. wide, with a dense tuft of long, thin, hair-like roots at the base.

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1977  
THE UNIVERSITY OF TORONTO LIBRARIES  
1977

27. *Chlorophytum comosum* (L.) Willd.

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2,100,000,000

**STATION PLANNING  
GARDEN CITY, KANSAS AND VICTOR, COLORADO**

**PLANE: CESSNA 172N  
DATE: APRIL 1980**

**GARFIELD COUNTY AIRPORT #1 - GARDEN CITY  
DETERMINED BY: CESSNA 172N**

**WIND DIRECTION: 180 DEGREES, WIND VELOCITY: 10 MPH, ALTITUDE: 5000 FT, PRESSURE: 29.92 INCHES OF MERCURY**

| WIND DIR. | TEMP (°F) | HGT (FT) | TEMP (°F) | DEPTHS (IN) |
|-----------|-----------|----------|-----------|-------------|
| 180       | 50        | 5000     | 50        | 1000        |
| 180       | 50        | 5000     | 50        | 1000        |

**NO. 1: GARDEN CITY**

| WIND DIR. | TEMP (°F) | HGT (FT) | TEMP (°F) | DEPTHS (IN) |
|-----------|-----------|----------|-----------|-------------|
| 180       | 50        | 5000     | 50        | 1000        |
| 180       | 50        | 5000     | 50        | 1000        |

**NO. 2: GARDEN CITY**

| WIND DIR. | TEMP (°F) | HGT (FT) | TEMP (°F) | DEPTHS (IN) |
|-----------|-----------|----------|-----------|-------------|
| 180       | 50        | 5000     | 50        | 1000        |
| 180       | 50        | 5000     | 50        | 1000        |

**NO. 3: GARDEN CITY**

| WIND DIR. | TEMP (°F) | HGT (FT) | TEMP (°F) | DEPTHS (IN) |
|-----------|-----------|----------|-----------|-------------|
| 180       | 50        | 5000     | 50        | 1000        |
| 180       | 50        | 5000     | 50        | 1000        |

**NO. 4: GARDEN CITY**

| WIND DIR. | TEMP (°F) | HGT (FT) | TEMP (°F) | DEPTHS (IN) |
|-----------|-----------|----------|-----------|-------------|
| 180       | 50        | 5000     | 50        | 1000        |
| 180       | 50        | 5000     | 50        | 1000        |

**NO. 5: GARDEN CITY**

| WIND DIR. | TEMP (°F) | HGT (FT) | TEMP (°F) | DEPTHS (IN) |
|-----------|-----------|----------|-----------|-------------|
| 180       | 50        | 5000     | 50        | 1000        |
| 180       | 50        | 5000     | 50        | 1000        |

**NO. 6: GARDEN CITY**

| WIND DIR. | TEMP (°F) | HGT (FT) | TEMP (°F) | DEPTHS (IN) |
|-----------|-----------|----------|-----------|-------------|
| 180       | 50        | 5000     | 50        | 1000        |
| 180       | 50        | 5000     | 50        | 1000        |

**NO. 7: GARDEN CITY**

| WIND DIR. | TEMP (°F) | HGT (FT) | TEMP (°F) | DEPTHS (IN) |
|-----------|-----------|----------|-----------|-------------|
| 180       | 50        | 5000     | 50        | 1000        |
| 180       | 50        | 5000     | 50        | 1000        |

**NO. 8: GARDEN CITY**

| WIND DIR. | TEMP (°F) | HGT (FT) | TEMP (°F) | DEPTHS (IN) |
|-----------|-----------|----------|-----------|-------------|
| 180       | 50        | 5000     | 50        | 1000        |
| 180       | 50        | 5000     | 50        | 1000        |

**NO. 9: GARDEN CITY**

| WIND DIR. | TEMP (°F) | HGT (FT) | TEMP (°F) | DEPTHS (IN) |
|-----------|-----------|----------|-----------|-------------|
| 180       | 50        | 5000     | 50        | 1000        |
| 180       | 50        | 5000     | 50        | 1000        |

**NO. 10: GARDEN CITY**

| WIND DIR. | TEMP (°F) | HGT (FT) | TEMP (°F) | DEPTHS (IN) |
|-----------|-----------|----------|-----------|-------------|
| 180       | 50        | 5000     | 50        | 1000        |
| 180       | 50        | 5000     | 50        | 1000        |



1970-1971  
Engine #1  
12-12-1971

MS. T. 1. 2. v. 1, fol. 107

## ANSWER

386 T. R. STONE

5011r #1

1977-78

|  | Y<sub>0</sub> | Y<sub>1</sub> | Y<sub>2</sub> | Y<sub>3</sub> | Y<sub>4</sub> | Y<sub>5</sub> | Y<sub>6</sub> | Y<sub>7</sub> | Y<sub>8</sub> | Y<sub>9</sub> | Y<sub>10</sub> | Y<sub>11</sub> | Y<sub>12</sub> | Y<sub>13</sub> | Y<sub>14</sub> | Y<sub>15</sub> | Y<sub>16</sub> | Y<sub>17</sub> | Y<sub>18</sub> | Y<sub>19</sub> | Y<sub>20</sub> | Y<sub>21</sub> | Y<sub>22</sub> | Y<sub>23</sub> | Y<sub>24</sub> | Y<sub>25</sub> | Y<sub>26</sub> | Y<sub>27</sub> | Y<sub>28</sub> | Y<sub>29</sub> | Y<sub>30</sub> | Y<sub>31</sub> | Y<sub>32</sub> | Y<sub>33</sub> | Y<sub>34</sub> | Y<sub>35</sub> | Y<sub>36</sub> | Y<sub>37</sub> | Y<sub>38</sub> | Y<sub>39</sub> | Y<sub>40</sub> | Y<sub>41</sub> | Y<sub>42</sub> | Y<sub>43</sub> | Y<sub>44</sub> | Y<sub>45</sub> | Y<sub>46</sub> | Y<sub>47</sub> | Y<sub>48</sub> | Y<sub>49</sub> | Y<sub>50</sub> | Y<sub>51</sub> | Y<sub>52</sub> | Y<sub>53</sub> | Y<sub>54</sub> | Y<sub>55</sub> | Y<sub>56</sub> | Y<sub>57</sub> | Y<sub>58</sub> | Y<sub>59</sub> | Y<sub>60</sub> | Y<sub>61</sub> | Y<sub>62</sub> | Y<sub>63</sub> | Y<sub>64</sub> | Y<sub>65</sub> | Y<sub>66</sub> | Y<sub>67</sub> | Y<sub>68</sub> | Y<sub>69</sub> | Y<sub>70</sub> | Y<sub>71</sub> | Y<sub>72</sub> | Y<sub>73</sub> | Y<sub>74</sub> | Y<sub>75</sub> | Y<sub>76</sub> | Y<sub>77</sub> | Y<sub>78</sub> | Y<sub>79</sub> | Y<sub>80</sub> | Y<sub>81</sub> | Y<sub>82</sub> | Y<sub>83</sub> | Y<sub>84</sub> | Y<sub>85</sub> | Y<sub>86</sub> | Y<sub>87</sub> | Y<sub>88</sub> | Y<sub>89</sub> | Y<sub>90</sub> | Y<sub>91</sub> | Y<sub>92</sub> | Y<sub>93</sub> | Y<sub>94</sub> | Y<sub>95</sub> | Y<sub>96</sub> | Y<sub>97</sub> | Y<sub>98</sub> | Y<sub>99</sub> | Y<sub>100</sub> | Y<sub>101</sub> | Y<sub>102</sub> | Y<sub>103</sub> | Y<sub>104</sub> | Y<sub>105</sub> | Y<sub>106</sub> | Y<sub>107</sub> | Y<sub>108</sub> | Y<sub>109</sub> | Y<sub>110</sub> | Y<sub>111</sub> | Y<sub>112</sub> | Y<sub>113</sub> | Y<sub>114</sub> | Y<sub>115</sub> | Y<sub>116</sub> | Y<sub>117</sub> | Y<sub>118</sub> | Y<sub>119</sub> | Y<sub>120</sub> | Y<sub>121</sub> | Y<sub>122</sub> | Y<sub>123</sub> | Y<sub>124</sub> | Y<sub>125</sub> | Y<sub>126</sub> | Y<sub>127</sub> | Y<sub>128</sub> | Y<sub>129</sub> | Y<sub>130</sub> | Y<sub>131</sub> | Y<sub>132</sub> | Y<sub>133</sub> | Y<sub>134</sub> | Y<sub>135</sub> | Y<sub>136</sub> | Y<sub>137</sub> | Y<sub>138</sub> | Y<sub>139</sub> | Y<sub>140</sub> | Y<sub>141</sub> | Y<sub>142</sub> | Y<sub>143</sub> | Y<sub>144</sub> | Y<sub>145</sub> | Y<sub>146</sub> | Y<sub>147</sub> | Y<sub>148</sub> | Y<sub>149</sub> | Y<sub>150</sub> | Y<sub>151</sub> | Y<sub>152</sub> | Y<sub>153</sub> | Y<sub>154</sub> | Y<sub>155</sub> | Y<sub>156</sub> | Y<sub>157</sub> | Y<sub>158</sub> | Y<sub>159</sub> | Y<sub>160</sub> | Y<sub>161</sub> | Y<sub>162</sub> | Y<sub>163</sub> | Y<sub>164</sub> | Y<sub>165</sub> | Y<sub>166</sub> | Y<sub>167</sub> | Y<sub>168</sub> | Y<sub>169</sub> | Y<sub>170</sub> | Y<sub>171</sub> | Y<sub>172</sub> | Y<sub>173</sub> | Y<sub>174</sub> | Y<sub>175</sub> | Y<sub>176</sub> | Y<sub>177</sub> | Y<sub>178</sub> | Y<sub>179</sub> | Y<sub>180</sub> | Y<sub>181</sub> | Y<sub>182</sub> | Y<sub>183</sub> | Y<sub>184</sub> | Y<sub>185</sub> | Y<sub>186</sub> | Y<sub>187</sub> | Y<sub>188</sub> | Y<sub>189</sub> | Y<sub>190</sub> | Y<sub>191</sub> | Y<sub>192</sub> | Y<sub>193</sub> | Y<sub>194</sub> | Y<sub>195</sub> | Y<sub>196</sub> | Y<sub>197</sub> | Y<sub>198</sub> | Y<sub>199</sub> | Y<sub>200</sub> | Y<sub>201</sub> | Y<sub>202</sub> | Y<sub>203</sub> | Y<sub>204</sub> | Y<sub>205</sub> | Y<sub>206</sub> | Y<sub>207</sub> | Y<sub>208</sub> | Y<sub>209</sub> | Y<sub>210</sub> | Y<sub>211</sub> | Y<sub>212</sub> | Y<sub>213</sub> | Y<sub>214</sub> | Y<sub>215</sub> | Y<sub>216</sub> | Y<sub>217</sub> | Y<sub>218</sub> | Y<sub>219</sub> | Y<sub>220</sub> | Y<sub>221</sub> | Y<sub>222</sub> | Y<sub>223</sub> | Y<sub>224</sub> | Y<sub>225</sub> | Y<sub>226</sub> | Y<sub>227</sub> | Y<sub>228</sub> | Y<sub>229</sub> | Y<sub>230</sub> | Y<sub>231</sub> | Y<sub>232</sub> | Y<sub>233</sub> | Y<sub>234</sub> | Y<sub>235</sub> | Y<sub>236</sub> | Y<sub>237</sub> | Y<sub>238</sub> | Y<sub>239</sub> | Y<sub>240</sub> | Y<sub>241</sub> | Y<sub>242</sub> | Y<sub>243</sub> | Y<sub>244</sub> | Y<sub>245</sub> | Y<sub>246</sub> | Y<sub>247</sub> | Y<sub>248</sub> | Y<sub>249</sub> | Y<sub>250</sub> | Y<sub>251</sub> | Y<sub>252</sub> | Y<sub>253</sub> | Y<sub>254</sub> | Y<sub>255</sub> | Y<sub>256</sub> | Y<sub>257</sub> | Y<sub>258</sub> | Y<sub>259</sub> | Y<sub>260</sub> | Y<sub>261</sub> | Y<sub>262</sub> | Y<sub>263</sub> | Y<sub>264</sub> | Y<sub>265</sub> | Y<sub>266</sub> | Y<sub>267</sub> | Y<sub>268</sub> | Y<sub>269</sub> | Y<sub>270</sub> | Y<sub>271</sub> | Y<sub>272</sub> | Y<sub>273</sub> | Y<sub>274</sub> | Y<sub>275</sub> | Y<sub>276</sub> | Y<sub>277</sub> | Y<sub>278</sub> | Y<sub>279</sub> | Y<sub>280</sub> | Y<sub>281</sub> | Y<sub>282</sub> | Y<sub>283</sub> | Y<sub>284</sub> | Y<sub>285</sub> | Y<sub>286</sub> | Y<sub>287</sub> | Y<sub>288</sub> | Y<sub>289</sub> | Y<sub>290</sub> | Y<sub>291</sub> | Y<sub>292</sub> | Y<sub>293</sub> | Y<sub>294</sub> | Y<sub>295</sub> | Y<sub>296</sub> | Y<sub>297</sub> | Y<sub>298</sub> | Y<sub>299</sub> | Y<sub>300</sub> | Y<sub>301</sub> | Y<sub>302</sub> | Y<sub>303</sub> | Y<sub>304</sub> | Y<sub>305</sub> | Y<sub>306</sub> | Y<sub>307</sub> | Y<sub>308</sub> | Y<sub>309</sub> | Y<sub>310</sub> | Y<sub>311</sub> | Y<sub>312</sub> | Y<sub>313</sub> | Y<sub>314</sub> | Y<sub>315</sub> | Y<sub>316</sub> | Y<sub>317</sub> | Y<sub>318</sub> | Y<sub>319</sub> | Y<sub>320</sub> | Y<sub>321</sub> | Y<sub>322</sub> | Y<sub>323</sub> | Y<sub>324</sub> | Y<sub>325</sub> | Y<sub>326</sub> | Y<sub>327</sub> | Y<sub>328</sub> | Y<sub>329</sub> | Y<sub>330</sub> | Y<sub>331</sub> | Y<sub>332</sub> | Y<sub>333</sub> | Y<sub>334</sub> | Y<sub>335</sub> | Y<sub>336</sub> | Y<sub>337</sub> | Y<sub>338</sub> | Y<sub>339</sub> | Y<sub>340</sub> | Y<sub>341</sub> | Y<sub>342</sub> | Y<sub>343</sub> | Y<sub>344</sub> | Y<sub>345</sub> | Y<sub>346</sub> | Y<sub>347</sub> | Y<sub>348</sub> | Y<sub>349</sub> | Y<sub>350</sub> | Y<sub>351</sub> | Y<sub>352</sub> | Y<sub>353</sub> | Y<sub>354</sub> | Y<sub>355</sub> | Y<sub>356</sub> | Y<sub>357</sub> | Y<sub>358</sub> | Y<sub>359</sub> | Y<sub>360</sub> | Y<sub>361</sub> | Y<sub>362</sub> | Y<sub>363</sub> | Y<sub>364</sub> | Y<sub>365</sub> | Y<sub>366</sub> | Y<sub>367</sub> | Y<sub>368</sub> | Y<sub>369</sub> | Y<sub>370</sub> | Y<sub>371</sub> | Y<sub>372</sub> | Y<sub>373</sub> | Y<sub>374</sub> | Y<sub>375</sub> | Y<sub>376</sub> | Y<sub>377</sub> | Y<sub>378</sub> | Y<sub>379</sub> | Y<sub>380</sub> | Y<sub>381</sub> | Y<sub>382</sub> | Y<sub>383</sub> | Y<sub>384</sub> | Y<sub>385</sub> | Y<sub>386</sub> | Y<sub>387</sub> | Y<sub>388</sub> | Y<sub>389</sub> | Y<sub>390</sub> | Y<sub>391</sub> | Y<sub>392</sub> | Y<sub>393</sub> | Y<sub>394</sub> | Y<sub>395</sub> | Y<sub>396</sub> | Y<sub>397</sub> | Y<sub>398</sub> | Y<sub>399</sub> | Y<sub>400</sub> | Y<sub>401</sub> | Y<sub>402</sub> | Y<sub>403</sub> | Y<sub>404</sub> | Y<sub>405</sub> | Y<sub>406</sub> | Y<sub>407</sub> | Y<sub>408</sub> | Y<sub>409</sub> | Y<sub>410</sub> | Y<sub>411</sub> | Y<sub>412</sub> | Y<sub>413</sub> | Y<sub>414</sub> | Y<sub>415</sub> | Y<sub>416</sub> | Y<sub>417</sub> | Y<sub>418</sub> | Y<sub>419</sub> | Y<sub>420</sub> | Y<sub>421</sub> | Y<sub>422</sub> | Y<sub>423</sub> | Y<sub>424</sub> | Y<sub>425</sub> | Y<sub>426</sub> | Y<sub>427</sub> | Y<sub>428</sub> | Y<sub>429</sub> | Y<sub>430</sub> | Y<sub>431</sub> | Y<sub>432</sub> | Y<sub>433</sub> | Y<sub>434</sub> | Y<sub>435</sub> | Y<sub>436</sub> | Y<sub>437</sub> | Y<sub>438</sub> | Y<sub>439</sub> | Y<sub>440</sub> | Y<sub>441</sub> | Y<sub>442</sub> | Y<sub>443</sub> | Y<sub>444</sub> | Y<sub>445</sub> | Y<sub>446</sub> | Y<sub>447</sub> | Y<sub>448</sub> | Y<sub>449</sub> | Y<sub>450</sub> | Y<sub>451</sub> | Y<sub>452</sub> | Y<sub>453</sub> | Y<sub>454</sub> | Y<sub>455</sub> | Y<sub>456</sub> | Y<sub>457</sub> | Y<sub>458</sub> | Y<sub>459</sub> | Y<sub>460</sub> | Y<sub>461</sub> | Y<sub>462</sub> | Y<sub>463</sub> | Y<sub>464</sub> | Y<sub>465</sub> | Y<sub>466</sub> | Y<sub>467</sub> | Y<sub>468</sub> | Y<sub>469</sub> | Y<sub>470</sub> | Y<sub>471</sub> | Y<sub>472</sub> | Y<sub>473</sub> | Y<sub>474</sub> | Y<sub>475</sub> | Y<sub>476</sub> | Y<sub>477</sub> | Y<sub>478</sub> | Y<sub>479</sub> | Y<sub>480</sub> | Y<sub>481</sub> | Y<sub>482</sub> | Y<sub>483</sub> | Y<sub>484</sub> | Y<sub>485</sub> | Y<sub>486</sub> | Y<sub>487</sub> | Y<sub>488</sub> | Y<sub>489</sub> | Y<sub>490</sub> | Y<sub>491</sub> | Y<sub>492</sub> | Y<sub>493</sub> | Y<sub>494</sub> | Y<sub>495</sub> | Y<sub>496</sub> | Y<sub>497</sub> | Y<sub>498</sub> | Y<sub>499</sub> | Y<sub>500</sub> | Y<sub>501</sub> | Y<sub>502</sub> | Y<sub>503</sub> | Y<sub>504</sub> | Y<sub>505</sub> | Y<sub>506</sub> | Y<sub>507</sub> | Y<sub>508</sub> | Y<sub>509</sub> | Y<sub>510</sub> | Y<sub>511</sub> | Y<sub>512</sub> | Y<sub>513</sub> | Y<sub>514</sub> | Y<sub>515</sub> | Y<sub>516</sub> | Y<sub>517</sub> | Y<sub>518</sub> | Y<sub>519</sub> | Y<sub>520</sub> | Y<sub>521</sub> | Y<sub>522</sub> | Y<sub>523</sub> | Y<sub>524</sub> | Y<sub>525</sub> | Y<sub>526</sub> | Y<sub>527</sub> | Y<sub>528</sub> | Y<sub>529</sub> | Y<sub>530</sub> | Y<sub>531</sub> | Y<sub>532</sub> | Y<sub>533</sub> | Y<sub>534</sub> | Y<sub>535</sub> | Y<sub>536</sub> | Y<sub>537</sub> | Y<sub>538</sub> | Y<sub>539</sub> | Y<sub>540</sub> | Y<sub>541</sub> | Y<sub>542</sub> | Y<sub>543</sub> | Y<sub>544</sub> | Y<sub>545</sub> | Y<sub>546</sub> | Y<sub>547</sub> | Y<sub>548</sub> | Y<sub>549</sub> | Y<sub>550</sub> | Y<sub>551</sub> | Y<sub>552</sub> | Y<sub>553</sub> | Y<sub>554</sub> | Y<sub>555</sub> | Y<sub>556</sub> | Y<sub>557</sub> | Y<sub>558</sub> | Y<sub>559</sub> | Y<sub>560</sub> | Y<sub>561</sub> | Y<sub>562</sub> | Y<sub>563</sub> | Y<sub>564</sub> | Y<sub>565</sub> | Y<sub>566</sub> | Y<sub>567</sub> | Y<sub>568</sub> | Y<sub>569</sub> | Y<sub>570</sub> | Y<sub>571</sub> | Y<sub>572</sub> | Y<sub>573</sub> | Y<sub>574</sub> | Y<sub>575</sub> | Y<sub>576</sub> | Y<sub>577</sub> | Y<sub>578</sub> | Y<sub>579</sub> | Y<sub>580</sub> | Y<sub>581</sub> | Y<sub>582</sub> | Y<sub>583</sub> | Y<sub>584</sub> | Y<sub>585</sub> | Y<sub>586</sub> | Y<sub>587</sub> | Y<sub>588</sub> | Y<sub>589</sub> | Y<sub>590</sub> | Y<sub>591</sub> | Y<sub>592</sub> | Y<sub>593</sub> | Y<sub>594</sub> | Y<sub>595</sub> | Y<sub>596</sub> | Y<sub>597</sub> | Y<sub>598</sub> | Y<sub>599</sub> | Y<sub>600</sub> | Y<sub>601</sub> | Y<sub>602</sub> | Y<sub>603</sub> | Y<sub>604</sub> | Y<sub>605</sub> | Y<sub>606</sub> | Y<sub>607</sub> | Y<sub>608</sub> | Y<sub>609</sub> | Y<sub>610</sub> | Y<sub>611</sub> | Y<sub>612</sub> | Y<sub>613</sub> | Y<sub>614</sub> | Y<sub>615</sub> | Y<sub>616</sub> | Y<sub>617</sub> | Y<sub>618</sub> | Y<sub>619</sub> | Y<sub>620</sub> | Y<sub>621</sub> | Y<sub>622</sub> | Y<sub>623</sub> | Y<sub>624</sub> | Y<sub>625</sub> | Y<sub>626</sub> | Y<sub>627</sub> | Y<sub>628</sub> | Y<sub>629</sub> | Y<sub>630</sub> | Y<sub>631</sub> | Y<sub>632</sub> | Y<sub>633</sub> | Y<sub>634</sub> | Y<sub>635</sub> | Y<sub>636</sub> | Y<sub>637</sub> | Y<sub>638</sub> | Y<sub>639</sub> | Y<sub>640</sub> | Y<sub>641</sub> | Y<sub>642</sub> | Y<sub>643</sub> | Y<sub>644</sub> | Y<sub>645</sub> | Y<sub>646</sub> | Y<sub>647</sub> | Y<sub>648</sub> | Y<sub>649</sub> | Y<sub>650</sub> | Y<sub>651</sub> | Y<sub>652</sub> | Y<sub>653</sub> | Y<sub>654</sub> | Y<sub>655</sub> | Y<sub>656</sub> | Y<sub>657</sub> | Y<sub>658</sub> | Y<sub>659</sub> | Y<sub>660</sub> | Y<sub>661</sub> | Y<sub>662</sub> | Y<sub>663</sub> | Y<sub>664</sub> | Y<sub>665</sub> | Y<sub>666</sub> | Y<sub>667</sub> | Y<sub>668</sub> | Y<sub>669</sub> | Y<sub>670</sub> | Y<sub>671</sub> | Y<sub>672</sub> | Y<sub>673</sub> | Y<sub>674</sub> | Y<sub>675</sub> | Y<sub>676</sub> | Y<sub>677</sub> | Y<sub>678</sub> | Y<sub>679</sub> | Y<sub>680</sub> | Y<sub>681</sub> | Y<sub>682</sub> | Y<sub>683</sub> | Y<sub>684</sub> | Y<sub>685</sub> | Y<sub>686</sub> | Y<sub>687</sub> | Y<sub>688</sub> | Y<sub>689</sub> | Y<sub>690</sub> | Y<sub>691</sub> | Y<sub>692</sub> | Y<sub>693</sub> | Y<sub>694</sub> | Y<sub>695</sub> | Y<sub>696</sub> | Y<sub>697</sub> | Y<sub>698</sub> | Y<sub>699</sub> | Y<sub>700</sub> | Y<sub>701</sub> | Y<sub>702</sub> | Y<sub>703</sub> | Y<sub>704</sub> | Y<sub>705</sub> | Y<sub>706</sub> | Y<sub>707</sub> | Y<sub>708</sub> | Y<sub>709</sub> | Y<sub>710</sub> | Y<sub>711</sub> | Y<sub>712</sub> | Y<sub>713</sub> | Y<sub>714</sub> | Y<sub>715</sub> | Y<sub>716</sub> | Y<sub>717</sub> | Y<sub>718</sub> | Y<sub>719</sub> | Y<sub>720</sub> | Y<sub>721</sub> | Y<sub>722</sub> | Y<sub>723</sub> | Y<sub>724</sub> | Y<sub>725</sub> | Y<sub>726</sub> | Y<sub>727</sub> | Y<sub>728</sub> | Y<sub>729</sub> | Y<sub>730</sub> | Y<sub>731</sub> | Y<sub>732</sub> | Y<sub>733</sub> | Y<sub>734</sub> | Y<sub>735</sub> | Y<sub>736</sub> | Y<sub>737</sub> | Y<sub>738</sub> | Y<sub>739</sub> | Y<sub>740</sub> | Y<sub>741</sub> | Y<sub>742</sub> | Y<sub>743</sub> | Y<sub>744</sub> | Y<sub>745</sub> | Y<sub>746</sub> | Y<sub>747</sub> | Y<sub>748</sub> | Y<sub>749</sub> | Y<sub>750</sub> | Y<sub>751</sub> | Y<sub>752</sub> | Y<sub>753</sub> | Y<sub>754</sub> | Y<sub>755</sub> | Y<sub>756</sub> | Y<sub>757</sub> | Y<sub>758</sub> | Y<sub>759</sub> | Y<sub>760</sub> | Y<sub>761</sub> | Y<sub>762</sub> | Y<sub>763</sub> | Y<sub>764</sub> | Y<sub>765</sub> | Y<sub>766</sub> | Y<sub>767</sub> | Y<sub>768</sub> | Y<sub>769</sub> | Y<sub>770</sub> | Y<sub>771</sub> | Y<sub>772</sub> | Y<sub>773</sub> | Y<sub>774</sub> | Y<sub>775</sub> | Y<sub>776</sub> | Y<sub>777</sub> | Y<sub>778</sub> | Y<sub>779</sub> | Y<sub>780</sub> | Y<sub>781</sub> | Y<sub>782</sub> | Y<sub>783</sub> | Y<sub>784</sub> | Y<sub>785</sub> | Y<sub>786</sub> | Y<sub>787</sub> | Y<sub>788</sub> | Y<sub>789</sub> | Y<sub>790</sub> | Y<sub>791</sub> | Y<sub>792</sub> | Y<sub>793</sub> | Y<sub>794</sub> | Y<sub>795</sub> | Y<sub>796</sub> | Y<sub>797</sub> | Y<sub>798</sub> | Y<sub>799</sub> | Y<sub>800</sub> | Y<sub>801</sub> | Y<sub>802</sub> | Y<sub>803</sub> | Y<sub>804</sub> | Y<sub>805</sub> | Y<sub>806</sub> | Y<sub>807</sub> | Y<sub>8</sub> |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

THE THERMOPHYSICAL

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THE TIGER 21

卷之三

100-200-400

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### ANSWER

199  
180  
1730 1000  
160

|  |
|--|
|  |
|--|

1970-71  
1971-72

Guarier  
4  
15.5  
1.3

• 1953-02-0001 • 1953-0

1980-1981  
A. J. P. G. M. VAN DER HORST

100% of the time, the PDI was 14.90.

$\frac{3}{4} \pi \cdot 10 \text{ rad}$

### **No. 1. *Schistostoma***

**Proposed Project**

### REFERENCES AND NOTES

1948-1958  
1958

ANSWER TO THE DEBATE ON THE BUDGET



196 Dodge Station  
Van #1  
13-17-61

|     | Row | Alt.   | Dec. | Ref. |
|-----|-----|--------|------|------|
| 1   | 1   | 107.51 | 16   |      |
| 2   | 2   | 108.01 | 16   |      |
| 3   | 3   | 108.21 | 16   |      |
| 4   | 4   | 108.24 | 16   |      |
| 5   | 5   | 108.24 | 16   |      |
| 6   | 6   | 108.24 | 16   |      |
| 7   | 7   | 108.24 | 16   |      |
| 8   | 8   | 108.24 | 16   |      |
| 9   | 9   | 108.24 | 16   |      |
| 10  | 10  | 108.24 | 16   |      |
| 11  | 11  | 108.24 | 16   |      |
| 12  | 12  | 108.24 | 16   |      |
| 13  | 13  | 108.24 | 16   |      |
| 14  | 14  | 108.24 | 16   |      |
| 15  | 15  | 108.24 | 16   |      |
| 16  | 16  | 108.24 | 16   |      |
| 17  | 17  | 108.24 | 16   |      |
| 18  | 18  | 108.24 | 16   |      |
| 19  | 19  | 108.24 | 16   |      |
| 20  | 20  | 108.24 | 16   |      |
| 21  | 21  | 108.24 | 16   |      |
| 22  | 22  | 108.24 | 16   |      |
| 23  | 23  | 108.24 | 16   |      |
| 24  | 24  | 108.24 | 16   |      |
| 25  | 25  | 108.24 | 16   |      |
| 26  | 26  | 108.24 | 16   |      |
| 27  | 27  | 108.24 | 16   |      |
| 28  | 28  | 108.24 | 16   |      |
| 29  | 29  | 108.24 | 16   |      |
| 30  | 30  | 108.24 | 16   |      |
| 31  | 31  | 108.24 | 16   |      |
| 32  | 32  | 108.24 | 16   |      |
| 33  | 33  | 108.24 | 16   |      |
| 34  | 34  | 108.24 | 16   |      |
| 35  | 35  | 108.24 | 16   |      |
| 36  | 36  | 108.24 | 16   |      |
| 37  | 37  | 108.24 | 16   |      |
| 38  | 38  | 108.24 | 16   |      |
| 39  | 39  | 108.24 | 16   |      |
| 40  | 40  | 108.24 | 16   |      |
| 41  | 41  | 108.24 | 16   |      |
| 42  | 42  | 108.24 | 16   |      |
| 43  | 43  | 108.24 | 16   |      |
| 44  | 44  | 108.24 | 16   |      |
| 45  | 45  | 108.24 | 16   |      |
| 46  | 46  | 108.24 | 16   |      |
| 47  | 47  | 108.24 | 16   |      |
| 48  | 48  | 108.24 | 16   |      |
| 49  | 49  | 108.24 | 16   |      |
| 50  | 50  | 108.24 | 16   |      |
| 51  | 51  | 108.24 | 16   |      |
| 52  | 52  | 108.24 | 16   |      |
| 53  | 53  | 108.24 | 16   |      |
| 54  | 54  | 108.24 | 16   |      |
| 55  | 55  | 108.24 | 16   |      |
| 56  | 56  | 108.24 | 16   |      |
| 57  | 57  | 108.24 | 16   |      |
| 58  | 58  | 108.24 | 16   |      |
| 59  | 59  | 108.24 | 16   |      |
| 60  | 60  | 108.24 | 16   |      |
| 61  | 61  | 108.24 | 16   |      |
| 62  | 62  | 108.24 | 16   |      |
| 63  | 63  | 108.24 | 16   |      |
| 64  | 64  | 108.24 | 16   |      |
| 65  | 65  | 108.24 | 16   |      |
| 66  | 66  | 108.24 | 16   |      |
| 67  | 67  | 108.24 | 16   |      |
| 68  | 68  | 108.24 | 16   |      |
| 69  | 69  | 108.24 | 16   |      |
| 70  | 70  | 108.24 | 16   |      |
| 71  | 71  | 108.24 | 16   |      |
| 72  | 72  | 108.24 | 16   |      |
| 73  | 73  | 108.24 | 16   |      |
| 74  | 74  | 108.24 | 16   |      |
| 75  | 75  | 108.24 | 16   |      |
| 76  | 76  | 108.24 | 16   |      |
| 77  | 77  | 108.24 | 16   |      |
| 78  | 78  | 108.24 | 16   |      |
| 79  | 79  | 108.24 | 16   |      |
| 80  | 80  | 108.24 | 16   |      |
| 81  | 81  | 108.24 | 16   |      |
| 82  | 82  | 108.24 | 16   |      |
| 83  | 83  | 108.24 | 16   |      |
| 84  | 84  | 108.24 | 16   |      |
| 85  | 85  | 108.24 | 16   |      |
| 86  | 86  | 108.24 | 16   |      |
| 87  | 87  | 108.24 | 16   |      |
| 88  | 88  | 108.24 | 16   |      |
| 89  | 89  | 108.24 | 16   |      |
| 90  | 90  | 108.24 | 16   |      |
| 91  | 91  | 108.24 | 16   |      |
| 92  | 92  | 108.24 | 16   |      |
| 93  | 93  | 108.24 | 16   |      |
| 94  | 94  | 108.24 | 16   |      |
| 95  | 95  | 108.24 | 16   |      |
| 96  | 96  | 108.24 | 16   |      |
| 97  | 97  | 108.24 | 16   |      |
| 98  | 98  | 108.24 | 16   |      |
| 99  | 99  | 108.24 | 16   |      |
| 100 | 100 | 108.24 | 16   |      |
| 101 | 101 | 108.24 | 16   |      |
| 102 | 102 | 108.24 | 16   |      |
| 103 | 103 | 108.24 | 16   |      |
| 104 | 104 | 108.24 | 16   |      |
| 105 | 105 | 108.24 | 16   |      |
| 106 | 106 | 108.24 | 16   |      |
| 107 | 107 | 108.24 | 16   |      |
| 108 | 108 | 108.24 | 16   |      |
| 109 | 109 | 108.24 | 16   |      |
| 110 | 110 | 108.24 | 16   |      |
| 111 | 111 | 108.24 | 16   |      |
| 112 | 112 | 108.24 | 16   |      |
| 113 | 113 | 108.24 | 16   |      |
| 114 | 114 | 108.24 | 16   |      |
| 115 | 115 | 108.24 | 16   |      |
| 116 | 116 | 108.24 | 16   |      |
| 117 | 117 | 108.24 | 16   |      |
| 118 | 118 | 108.24 | 16   |      |
| 119 | 119 | 108.24 | 16   |      |
| 120 | 120 | 108.24 | 16   |      |
| 121 | 121 | 108.24 | 16   |      |
| 122 | 122 | 108.24 | 16   |      |
| 123 | 123 | 108.24 | 16   |      |
| 124 | 124 | 108.24 | 16   |      |
| 125 | 125 | 108.24 | 16   |      |
| 126 | 126 | 108.24 | 16   |      |
| 127 | 127 | 108.24 | 16   |      |
| 128 | 128 | 108.24 | 16   |      |
| 129 | 129 | 108.24 | 16   |      |
| 130 | 130 | 108.24 | 16   |      |
| 131 | 131 | 108.24 | 16   |      |
| 132 | 132 | 108.24 | 16   |      |
| 133 | 133 | 108.24 | 16   |      |
| 134 | 134 | 108.24 | 16   |      |
| 135 | 135 | 108.24 | 16   |      |
| 136 | 136 | 108.24 | 16   |      |
| 137 | 137 | 108.24 | 16   |      |
| 138 | 138 | 108.24 | 16   |      |
| 139 | 139 | 108.24 | 16   |      |
| 140 | 140 | 108.24 | 16   |      |
| 141 | 141 | 108.24 | 16   |      |
| 142 | 142 | 108.24 | 16   |      |
| 143 | 143 | 108.24 | 16   |      |
| 144 | 144 | 108.24 | 16   |      |
| 145 | 145 | 108.24 | 16   |      |
| 146 | 146 | 108.24 | 16   |      |
| 147 | 147 | 108.24 | 16   |      |
| 148 | 148 | 108.24 | 16   |      |
| 149 | 149 | 108.24 | 16   |      |
| 150 | 150 | 108.24 | 16   |      |
| 151 | 151 | 108.24 | 16   |      |
| 152 | 152 | 108.24 | 16   |      |
| 153 | 153 | 108.24 | 16   |      |
| 154 | 154 | 108.24 | 16   |      |
| 155 | 155 | 108.24 | 16   |      |
| 156 | 156 | 108.24 | 16   |      |
| 157 | 157 | 108.24 | 16   |      |
| 158 | 158 | 108.24 | 16   |      |
| 159 | 159 | 108.24 | 16   |      |
| 160 | 160 | 108.24 | 16   |      |
| 161 | 161 | 108.24 | 16   |      |
| 162 | 162 | 108.24 | 16   |      |
| 163 | 163 | 108.24 | 16   |      |
| 164 | 164 | 108.24 | 16   |      |
| 165 | 165 | 108.24 | 16   |      |
| 166 | 166 | 108.24 | 16   |      |
| 167 | 167 | 108.24 | 16   |      |
| 168 | 168 | 108.24 | 16   |      |
| 169 | 169 | 108.24 | 16   |      |
| 170 | 170 | 108.24 | 16   |      |
| 171 | 171 | 108.24 | 16   |      |
| 172 | 172 | 108.24 | 16   |      |
| 173 | 173 | 108.24 | 16   |      |
| 174 | 174 | 108.24 | 16   |      |
| 175 | 175 | 108.24 | 16   |      |
| 176 | 176 | 108.24 | 16   |      |
| 177 | 177 | 108.24 | 16   |      |
| 178 | 178 | 108.24 | 16   |      |
| 179 | 179 | 108.24 | 16   |      |
| 180 | 180 | 108.24 | 16   |      |
| 181 | 181 | 108.24 | 16   |      |
| 182 | 182 | 108.24 | 16   |      |
| 183 | 183 | 108.24 | 16   |      |
| 184 | 184 | 108.24 | 16   |      |
| 185 | 185 | 108.24 | 16   |      |
| 186 | 186 | 108.24 | 16   |      |
| 187 | 187 | 108.24 | 16   |      |
| 188 | 188 | 108.24 | 16   |      |
| 189 | 189 | 108.24 | 16   |      |
| 190 | 190 | 108.24 | 16   |      |
| 191 | 191 | 108.24 | 16   |      |
| 192 | 192 | 108.24 | 16   |      |
| 193 | 193 | 108.24 | 16   |      |
| 194 | 194 | 108.24 | 16   |      |
| 195 | 195 | 108.24 | 16   |      |
| 196 | 196 | 108.24 | 16   |      |
| 197 | 197 | 108.24 | 16   |      |
| 198 | 198 | 108.24 | 16   |      |
| 199 | 199 | 108.24 | 16   |      |
| 200 | 200 | 108.24 | 16   |      |
| 201 | 201 | 108.24 | 16   |      |
| 202 | 202 | 108.24 | 16   |      |
| 203 | 203 | 108.24 | 16   |      |
| 204 | 204 | 108.24 | 16   |      |
| 205 | 205 | 108.24 | 16   |      |
| 206 | 206 | 108.24 | 16   |      |
| 207 | 207 | 108.24 | 16   |      |
| 208 | 208 | 108.24 | 16   |      |
| 209 | 209 | 108.24 | 16   |      |
| 210 | 210 | 108.24 | 16   |      |
| 211 | 211 | 108.24 | 16   |      |
| 212 | 212 | 108.24 | 16   |      |
| 213 | 213 | 108.24 | 16   |      |
| 214 | 214 | 108.24 | 16   |      |
| 215 | 215 | 108.24 | 16   |      |
| 216 | 216 | 108.24 | 16   |      |
| 217 | 217 | 108.24 | 16   |      |
| 218 | 218 | 108.24 | 16   |      |
| 219 | 219 | 108.24 | 16   |      |
| 220 | 220 | 108.24 | 16   |      |
| 221 | 221 | 108.24 | 16   |      |
| 222 | 222 | 108.24 | 16   |      |
| 223 | 223 | 108.24 | 16   |      |
| 224 | 224 | 108.24 | 16   |      |
| 225 | 225 | 108.24 | 16   |      |
| 226 | 226 | 108.24 | 16   |      |
| 227 | 227 | 108.24 | 16   |      |
| 228 | 228 | 108.24 | 16   |      |
| 229 | 229 | 108.24 | 16   |      |
| 230 | 230 | 108.24 | 16   |      |
| 231 | 231 | 108.24 | 16   |      |
| 232 | 232 | 108.24 | 16   |      |
| 233 | 233 | 108.24 | 16   |      |
| 234 | 234 | 108.24 | 16   |      |
| 235 | 235 | 108.24 | 16   |      |
| 236 | 236 | 108.24 | 16   |      |
| 237 | 237 | 108.24 | 16   |      |
| 238 | 238 | 108.24 | 16   |      |
| 239 | 239 | 108.24 | 16   |      |
| 240 | 240 | 108.24 | 16   |      |
| 241 | 241 | 108.24 | 16   |      |
| 242 | 242 | 108.24 | 16   |      |
| 243 | 243 | 108.24 | 16   |      |
| 244 | 244 | 108.24 | 16   |      |
| 245 | 245 | 108.24 | 16   |      |
| 246 | 246 | 108.24 | 16   |      |
| 247 | 247 | 108.24 | 16   |      |
| 248 | 248 | 108.24 | 16   |      |
| 249 | 249 | 108.24 | 16   |      |
| 250 | 250 | 108.24 | 16   |      |
| 251 | 251 | 108.24 | 16   |      |
| 252 | 252 | 108.24 | 16   |      |
| 253 | 253 | 108.24 | 16   |      |
| 254 | 254 | 108.24 | 16   |      |
| 255 | 255 | 108.24 | 16   |      |
| 256 | 256 | 108.24 | 16   |      |
| 257 | 257 | 108.24 | 16   |      |
| 258 | 258 | 108.24 | 16   |      |
| 259 | 259 | 108.24 | 16   |      |
| 260 | 260 | 108.24 | 16   |      |
| 261 | 261 | 108.24 | 16   |      |
| 262 | 262 | 108.24 | 16   |      |
| 263 | 263 | 108.24 | 16   |      |
| 264 | 264 | 108.24 | 16   |      |
| 265 | 265 | 108.24 | 16   |      |
| 266 | 266 | 108.24 | 16   |      |
| 267 | 267 | 108.24 | 16   |      |
| 268 | 268 | 108    |      |      |



W.G. MCGEE, Chairman  
SUBCOMMITTEE  
PRESIDENT

NO. 5 - 1970

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W.M. Tingle Collection

Section 41

10-17-51

|           | YOK  | 41-0                        |
|-----------|------|-----------------------------|
| Variable  | Sign | Coef.                       |
| Intercept | -    | 0                           |
| 130       | +    | .36                         |
| 129       | +    | .35                         |
| 128       | +    | .34                         |
| 127       | +    | .33                         |
| 126       | +    | .32                         |
| 125       | +    | .31                         |
| 124       | +    | .30                         |
| 123       | +    | .29                         |
| 122       | +    | .28                         |
| 121       | +    | .27                         |
| 120       | +    | .26                         |
| 119       | +    | .25                         |
| 118       | +    | .24                         |
| 117       | +    | .23                         |
| 116       | +    | .22                         |
| 115       | +    | .21                         |
| 114       | +    | .20                         |
| 113       | +    | .19                         |
| 112       | +    | .18                         |
| 111       | +    | .17                         |
| 110       | +    | .16                         |
| 109       | +    | .15                         |
| 108       | +    | .14                         |
| 107       | +    | .13                         |
| 106       | +    | .12                         |
| 105       | +    | .11                         |
| 104       | +    | .10                         |
| 103       | +    | .09                         |
| 102       | +    | .08                         |
| 101       | +    | .07                         |
| 100       | +    | .06                         |
| 99        | +    | .05                         |
| 98        | +    | .04                         |
| 97        | +    | .03                         |
| 96        | +    | .02                         |
| 95        | +    | .01                         |
| 94        | +    | .00                         |
| 93        | +    | -.01                        |
| 92        | +    | -.02                        |
| 91        | +    | -.03                        |
| 90        | +    | -.04                        |
| 89        | +    | -.05                        |
| 88        | +    | -.06                        |
| 87        | +    | -.07                        |
| 86        | +    | -.08                        |
| 85        | +    | -.09                        |
| 84        | +    | -.10                        |
| 83        | +    | -.11                        |
| 82        | +    | -.12                        |
| 81        | +    | -.13                        |
| 80        | +    | -.14                        |
| 79        | +    | -.15                        |
| 78        | +    | -.16                        |
| 77        | +    | -.17                        |
| 76        | +    | -.18                        |
| 75        | +    | -.19                        |
| 74        | +    | -.20                        |
| 73        | +    | -.21                        |
| 72        | +    | -.22                        |
| 71        | +    | -.23                        |
| 70        | +    | -.24                        |
| 69        | +    | -.25                        |
| 68        | +    | -.26                        |
| 67        | +    | -.27                        |
| 66        | +    | -.28                        |
| 65        | +    | -.29                        |
| 64        | +    | -.30                        |
| 63        | +    | -.31                        |
| 62        | +    | -.32                        |
| 61        | +    | -.33                        |
| 60        | +    | -.34                        |
| 59        | +    | -.35                        |
| 58        | +    | -.36                        |
| 57        | +    | -.37                        |
| 56        | +    | -.38                        |
| 55        | +    | -.39                        |
| 54        | +    | -.40                        |
| 53        | +    | -.41                        |
| 52        | +    | -.42                        |
| 51        | +    | -.43                        |
| 50        | +    | -.44                        |
| 49        | +    | -.45                        |
| 48        | +    | -.46                        |
| 47        | +    | -.47                        |
| 46        | +    | -.48                        |
| 45        | +    | -.49                        |
| 44        | +    | -.50                        |
| 43        | +    | -.51                        |
| 42        | +    | -.52                        |
| 41        | +    | -.53                        |
| 40        | +    | -.54                        |
| 39        | +    | -.55                        |
| 38        | +    | -.56                        |
| 37        | +    | -.57                        |
| 36        | +    | -.58                        |
| 35        | +    | -.59                        |
| 34        | +    | -.60                        |
| 33        | +    | -.61                        |
| 32        | +    | -.62                        |
| 31        | +    | -.63                        |
| 30        | +    | -.64                        |
| 29        | +    | -.65                        |
| 28        | +    | -.66                        |
| 27        | +    | -.67                        |
| 26        | +    | -.68                        |
| 25        | +    | -.69                        |
| 24        | +    | -.70                        |
| 23        | +    | -.71                        |
| 22        | +    | -.72                        |
| 21        | +    | -.73                        |
| 20        | +    | -.74                        |
| 19        | +    | -.75                        |
| 18        | +    | -.76                        |
| 17        | +    | -.77                        |
| 16        | +    | -.78                        |
| 15        | +    | -.79                        |
| 14        | +    | -.80                        |
| 13        | +    | -.81                        |
| 12        | +    | -.82                        |
| 11        | +    | -.83                        |
| 10        | +    | -.84                        |
| 9         | +    | -.85                        |
| 8         | +    | -.86                        |
| 7         | +    | -.87                        |
| 6         | +    | -.88                        |
| 5         | +    | -.89                        |
| 4         | +    | -.90                        |
| 3         | +    | -.91                        |
| 2         | +    | -.92                        |
| 1         | +    | -.93                        |
| 0         | +    | -.94                        |
|           |      | t-coefficients              |
|           |      | 4.307304                    |
|           |      | 3.455621                    |
|           |      | 3.355464                    |
|           |      | No. of Observations         |
|           |      | 8                           |
|           |      | Degrees of Freedom          |
|           |      | 7                           |
|           |      | t Coefficients: 0.316214    |
|           |      | S.E. Err of Coef.: 0.015079 |

W. T. Long & Co., Inc.  
17-63

File: 01610

ENCL B

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ENG Tioga Station  
Penns. 41

## NO Flight Station

Flight #  
1977.3

|             | 102  | 11-3               |
|-------------|------|--------------------|
| Measurement | Mean | Standard Deviation |
| 1710        | 29   | 1.16               |
| 1711        | 29   | 1.22               |
| 1712        | 29   | 1.22               |
| 1713        | 29   | 1.27               |
| 1714        | 29   | 1.27               |
| 1715        | 29   | 1.27               |
| 1716        | 29   | 1.27               |
| 1717        | 29.1 | 1.16               |
| 1718        | 29.5 | 1.16               |
| 1719        | 29.5 | 1.13               |
| 1720        | 29.5 | 1.16               |
| 1721        | 29.5 | 1.16               |
| 1722        | 29.5 | 1.16               |
| 1723        | 29.5 | 1.16               |

| Laboratory | Mean | SD   |
|------------|------|------|
| 1710       | 29   | 1.16 |
| 1711       | 29   | 1.22 |
| 1712       | 29   | 1.22 |
| 1713       | 29   | 1.27 |
| 1714       | 29   | 1.27 |
| 1715       | 29   | 1.27 |
| 1716       | 29   | 1.27 |
| 1717       | 29.1 | 1.16 |
| 1718       | 29.5 | 1.16 |
| 1719       | 29.5 | 1.13 |
| 1720       | 29.5 | 1.16 |
| 1721       | 29.5 | 1.16 |
| 1722       | 29.5 | 1.16 |
| 1723       | 29.5 | 1.16 |

CV% = 12.5% = 1.16

## Regression Analysis

Regression equation:

$$\text{Constant} = 29.00 \pm 0.00$$

Std Err of Est = 0.000007

R Squared = 0.99999

No. of Observations = 13

Degrees of Freedom = 12

t Coefficient = 5.16

Std Err of Coef = 0.208555

150 West Main  
Eaton 61  
10-18-33

| Year | Value | Value | Value |
|------|-------|-------|-------|
| 1700 | 100   | 100   | 100   |
| 1702 | 100   | 100   | 100   |
| 1703 | 100   | 100   | 100   |
| 1706 | 100   | 100   | 100   |
| 1710 | 100   | 100   | 100   |
| 1712 | 100   | 100   | 100   |
| 1713 | 100   | 100   | 100   |
| 1720 | 100   | 100   | 100   |
| 1726 | 100   | 100   | 100   |
| 1732 | 100   | 100   | 100   |
| 1736 | 100   | 100   | 100   |
| 1742 | 100   | 100   | 100   |
| 1746 | 100   | 100   | 100   |
| 1752 | 100   | 100   | 100   |
| 1756 | 100   | 100   | 100   |

1970-1971  
1971-1972

### Algebraic methods for $\alpha\beta$

CC-estimated  $\tau_{\text{CC}}$  measured with 100 measurements

118

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196  
197  
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THE BOSTONIAN

NG Thru Station:

Latitude:

Longitude:

|             | 2000  | 4.0        | 7                     |
|-------------|-------|------------|-----------------------|
| Calibration | 2000  | Calibrator |                       |
|             | 100   | 2          |                       |
|             | 100   | 3          |                       |
|             | 100   | 4          |                       |
|             | 100   | 5          |                       |
|             |       |            | Precision (mm)        |
| Sample      |       |            |                       |
| 1701        | 63    | 135.45     | Slope Int.            |
| 1702        | 64    | 135.67     | Sd Err of Lst.        |
| 1703        | 65    | 135.60     | R^2                   |
| 1710        | 64    | 135.67     | No. of Observations   |
| 1713        | 64    | 135.67     | Degrees of Freedom    |
| 1719        | 63    | 135.67     |                       |
| 1720        | 63    | 135.26     | % Coefficient of Var. |
| 1723        | 62    | 135.42     | Sd Err of Coef.       |
| 1731        | 63.5  | 135.40     |                       |
| 1735        | 62    | 135.32     |                       |
| 1740        | 64    | 135.52     |                       |
| 1742        | 59    | 135.49     |                       |
| 1752        | 61    | 135.49     |                       |
| 1759        | 61    | 135.47     |                       |
| Avg         | 61.50 | 135.41     | Intercept (mm)        |
|             |       |            | Max. Diff = 135.71    |

NG Triage Testimony  
Engine #1  
10-17-69

|             | NG        | NG        |
|-------------|-----------|-----------|
| Calibration | SPUR TEST | SPUR TEST |
|             | 1         | 1         |
|             | 500 "     | 500 "     |
|             | 1000      | 1000      |
|             | 1700      | 1700      |
|             | 2400      | 2400      |
|             | 3100      | 3100      |
|             | 3800      | 3800      |
|             | 4500      | 4500      |
|             | 5200      | 5200      |
|             | 5900      | 5900      |
|             | 6600      | 6600      |
|             | 7300      | 7300      |
|             | 8000      | 8000      |
|             | 8700      | 8700      |
|             | 9400      | 9400      |
|             | 10100     | 10100     |
|             | 10800     | 10800     |
|             | 11500     | 11500     |
|             | 12200     | 12200     |
|             | 12900     | 12900     |
|             | 13600     | 13600     |
|             | 14300     | 14300     |
|             | 15000     | 15000     |
|             | 15700     | 15700     |
|             | 16400     | 16400     |
|             | 17100     | 17100     |
|             | 17800     | 17800     |
|             | 18500     | 18500     |
|             | 19200     | 19200     |
|             | 19900     | 19900     |
|             | 20600     | 20600     |
|             | 21300     | 21300     |
|             | 22000     | 22000     |
|             | 22700     | 22700     |
|             | 23400     | 23400     |
|             | 24100     | 24100     |
|             | 24800     | 24800     |
|             | 25500     | 25500     |
|             | 26200     | 26200     |
|             | 26900     | 26900     |
|             | 27600     | 27600     |
|             | 28300     | 28300     |
|             | 29000     | 29000     |
|             | 29700     | 29700     |
|             | 30400     | 30400     |
|             | 31100     | 31100     |
|             | 31800     | 31800     |
|             | 32500     | 32500     |
|             | 33200     | 33200     |
|             | 33900     | 33900     |
|             | 34600     | 34600     |
|             | 35300     | 35300     |
|             | 36000     | 36000     |
|             | 36700     | 36700     |
|             | 37400     | 37400     |
|             | 38100     | 38100     |
|             | 38800     | 38800     |
|             | 39500     | 39500     |
|             | 40200     | 40200     |
|             | 40900     | 40900     |
|             | 41600     | 41600     |
|             | 42300     | 42300     |
|             | 43000     | 43000     |
|             | 43700     | 43700     |
|             | 44400     | 44400     |
|             | 45100     | 45100     |
|             | 45800     | 45800     |
|             | 46500     | 46500     |
|             | 47200     | 47200     |
|             | 47900     | 47900     |
|             | 48600     | 48600     |
|             | 49300     | 49300     |
|             | 50000     | 50000     |
|             | 50700     | 50700     |
|             | 51400     | 51400     |
|             | 52100     | 52100     |
|             | 52800     | 52800     |
|             | 53500     | 53500     |
|             | 54200     | 54200     |
|             | 54900     | 54900     |
|             | 55600     | 55600     |
|             | 56300     | 56300     |
|             | 57000     | 57000     |
|             | 57700     | 57700     |
|             | 58400     | 58400     |
|             | 59100     | 59100     |
|             | 59800     | 59800     |
|             | 60500     | 60500     |
|             | 61200     | 61200     |
|             | 61900     | 61900     |
|             | 62600     | 62600     |
|             | 63300     | 63300     |
|             | 64000     | 64000     |
|             | 64700     | 64700     |
|             | 65400     | 65400     |
|             | 66100     | 66100     |
|             | 66800     | 66800     |
|             | 67500     | 67500     |
|             | 68200     | 68200     |
|             | 68900     | 68900     |
|             | 69600     | 69600     |
|             | 70300     | 70300     |
|             | 71000     | 71000     |
|             | 71700     | 71700     |
|             | 72400     | 72400     |
|             | 73100     | 73100     |
|             | 73800     | 73800     |
|             | 74500     | 74500     |
|             | 75200     | 75200     |
|             | 75900     | 75900     |
|             | 76600     | 76600     |
|             | 77300     | 77300     |
|             | 78000     | 78000     |
|             | 78700     | 78700     |
|             | 79400     | 79400     |
|             | 80100     | 80100     |
|             | 80800     | 80800     |
|             | 81500     | 81500     |
|             | 82200     | 82200     |
|             | 82900     | 82900     |
|             | 83600     | 83600     |
|             | 84300     | 84300     |
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|             | 89200     | 89200     |
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|             | 132600    | 132600    |
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|             | 134000    | 134000    |
|             | 134700    | 134700    |
|             | 135400    | 135400    |
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|             | 136800    | 136800    |
|             | 137500    | 137500    |
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|             | 141700    | 141700    |
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|             | 143100    | 143100    |
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|             | 149400    | 149400    |
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|             | 159200    | 159200    |
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|             | 161400    | 161400    |
|             | 162100    | 162100    |
|             | 162800    | 162800    |
|             | 163500    | 163500    |
|             | 164200    | 164200    |
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|             | 166300    | 166300    |
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|             | 171200    | 171200    |
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|             | 185200    | 185200    |
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|             | 197800    | 197800    |
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|             | 200700    | 200700    |
|             | 201400    | 201400    |
|             | 202100    | 202100    |
|             | 202800    | 202800    |
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|             | 213300    | 213300    |
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|             | 214700    | 214700    |
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|             | 260900    | 260900    |
|             | 261600    | 261600    |
|             | 262300    | 262300    |
|             | 263000    | 263000    |
|             | 263700    | 263700    |
| </          |           |           |

CVC Tissue Station  
Engine #1  
10-17-80

|                   | TMC (as TMA) | 11-0     |                                      |
|-------------------|--------------|----------|--------------------------------------|
| Calibration       | SP60 CERO    | recorder |                                      |
|                   | 2            | 1.05     |                                      |
|                   | 531.7        | 1.7      |                                      |
|                   | 1204         | 13.35    |                                      |
|                   | 1750         | 26.5     |                                      |
| Regression Output |              |          |                                      |
| Sample            |              |          |                                      |
| 1639              | 32           | 925.77   | Constant                             |
| 1732              | 32           | 942.77   | Std Err of f Est                     |
| 1733              | 31.5         | 925.94   | R Squared                            |
| 1734              | 31.5         | 925.94   | No. of Observations                  |
| 1735              | 31.5         | 925.94   | Degrees of Freedom                   |
| 1736              | 31.5         | 925.94   | t Coefficient(s) 3.829738            |
| 1737              | 31.5         | 925.94   | Std Err of Coef. 2.060251            |
| 1738              | 32           | 942.77   | Adjusted measured TMC for H2O.       |
| 1739              | 32           | 942.77   | TMC dry = TMC wet x (1 + .8H2O/1000) |
| 1740              | 32           | 942.77   | where                                |
| 1741              | 32           | 942.77   | TMC wet (measured) = 925.94          |
| 1742              | 31.5         | 925.94   | H2O = 6.59                           |
| 1743              | 31.5         | 925.94   | TMC dry = 1000.45                    |
| 1744              | 31.79        | 925.03   |                                      |

APPENDIX D  
ENGINE NO. 2 CALCULATIONS AND SUMMARIES



J.S. TAYLOR  
PARKER HARRISON TAYLOR & CO., INC.  
NEW YORK

1972-1973 - 1973-1974 (X-2)

1923-1924  
1924-1925

DEPARTMENT OF THE NAVY - BUREAU OF INTELLIGENCE - WASHINGTON, D. C.

**DEPARTMENT OF STATE** **WIREGRAM**

在本研究中，我们探讨了不同类型的自我效能感（如学术、社交和情感）对大学生学习动机的影响。结果表明，自我效能感与学习动机之间存在显著的正相关关系。

Journal of Oral Rehabilitation 2003; 30: 105–111  
© 2003 Blackwell Publishing Ltd

Figure 1. The relationship between the number of species and the area of forest cover.

Scanned by J. E. Bissell (1992) (Tewksbury) (Ref ID: A16654) [scanned]

1930-1931. The author is grateful to Mr. W. H. G. Smith, M.A., F.R.S., F.R.G.S., for his permission to publish the results of his researches.

EM = 1.2 x 10<sup>30</sup>  
EM = 10<sup>30</sup> ergs/cm<sup>2</sup> sec<sup>-1</sup> Hz<sup>-1</sup> sterad<sup>-1</sup>  
EM = 10<sup>30</sup> ergs/cm<sup>2</sup> sec<sup>-1</sup>

1000000000  
FATIGUE TEST AND STRENGTH  
TEST NO. 101, cont.

TESTS ON 1000000000  
TEST NO. 101, cont.  
TESTS OF MATERIALS TESTED AND TESTED  
FOR STRENGTH AND STRENGTH

| TESTED ITEM                           | TEST NO. | TESTED AREA  | TEST NO. | TEST |
|---------------------------------------|----------|--------------|----------|------|
| LAD. TEMPERATURE = 36.0°C             | 101-101  | MAXIMUM AREA | 101-101  | TEST |
| STL. TEMPERATURE = 37.0°C             | 101-102  | MEDIUM AREA  | 101-102  | TEST |
| LAD. SKIN AREA = 8.00 cm <sup>2</sup> | 101-103  | MEDIUM AREA  | 101-103  | TEST |
| STL. SKIN AREA = 8.00 cm <sup>2</sup> | 101-104  | MEDIUM AREA  | 101-104  | TEST |
| NO. ANALYST                           | 101-105  | TEST         | 101-105  | TEST |
| TESTER                                | 101-106  | TEST         | 101-106  | TEST |
| TESTER                                | 101-107  | TEST         | 101-107  | TEST |
| TESTER                                | 101-108  | TEST         | 101-108  | TEST |
| TESTER                                | 101-109  | TEST         | 101-109  | TEST |
| TESTER                                | 101-110  | TEST         | 101-110  | TEST |

TESTS ON 1000000000 TESTED AND TESTED FOR STRENGTH AND STRENGTH TEST NO. 101, cont.

TESTS ON 1000000000 TESTED AND TESTED TEST NO. 101, cont.

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TESTS ON 1000000000 TESTED AND TESTED TEST NO. 101, cont.

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卷之三十一

• 10 •

WILSON, G. M., AND W. J. WILSON. 1913. The effect of temperature on the development of the mosquito, Aedes vexans (Meigen). Parasitology 4: 1-12.

$\frac{1}{2} \ln \left( \frac{1 + \sqrt{1 - 4x}}{2} \right) = \frac{1}{2} \ln \left( \frac{1 + \sqrt{1 - 4x}}{2} \right) + C$

*ANSWER* = *Wheatland Company Inc.*

17. *U.S. Fish and Wildlife Service, Biological Report 82(12): 1-10.*

在這裏，我們將會看到一個簡單的範例，說明如何在一個應用程式中使用 `File` 類別。

the *Journal of the Royal Statistical Society*, Series B, Volume 12, Number 1, March 1974.

WILHELM H. WILSON, JR., President; JAMES M. COOPER, Vice President; ROBERT L. BROWN, Secretary-Treasurer; J. E. BURGESS, Director; T. E.

**WITNESS STATEMENT** - *As agreed upon and signed at [Date]*

**TESTS ON  
MATERIALS  
PASSED BY THE MAINTAINANCE TESTS AND OTHERS**

TESTS ON MATERIALS PASSED BY THE MAINTAINANCE TESTS AND OTHERS  
 TESTS ON MATERIALS PASSED BY THE MAINTAINANCE TESTS AND OTHERS  
 TESTS ON MATERIALS PASSED BY THE MAINTAINANCE TESTS AND OTHERS  
 TESTS ON MATERIALS PASSED BY THE MAINTAINANCE TESTS AND OTHERS

| RUN NO. | TIME TO<br>#2 | RUN NO. | TIME TO<br>#2 |
|---------|---------------|---------|---------------|
| #2      | WED 10:30     | #2      | WED 10:30     |

TESTS ON MATERIALS PASSED BY THE MAINTAINANCE TESTS AND OTHERS  
 TESTS ON MATERIALS PASSED BY THE MAINTAINANCE TESTS AND OTHERS  
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TESTS ON MATERIALS PASSED BY THE MAINTAINANCE TESTS AND OTHERS  
 TESTS ON MATERIALS PASSED BY THE MAINTAINANCE TESTS AND OTHERS

## X3 Close Station

Figure 12

13 Oct 80

|        | 30         | 40        |  |
|--------|------------|-----------|--|
|        | Open Circ. | Regressed |  |
| 121301 | 1          | 4.8       |  |
| 121302 | 2          | 4.8       |  |
| 121303 | 12         | 4.8       |  |
| 121304 | 2          | 4.8       |  |
| Sample |            |           | Regression Statistics  |
| 121305 | 56.5       | 14.91     | R-squared = 0.62024  |
| 121306 | 56.5       | 14.91     | Std Err at Y Int = 1.587620  |
| 121307 | 56.5       | 14.91     | R-Squared = 0.698720   |
| 121308 | 56.5       | 14.91     | No. of Observations = 6  |
| 121309 | 56.5       | 14.91     | Degrees of Freedom = 4   |
| 121310 | 56.5       | 14.91     |  |
| 121311 | 56.5       | 14.91     | $\sum (y_i - \hat{y}_i)^2 / \sum (y_i - \bar{y})^2 = 0.25424$                  |
| 121312 | 56.5       | 14.91     | $R^2 = 1 - \frac{\sum (y_i - \hat{y}_i)^2}{\sum (y_i - \bar{y})^2} = 0.745756$ |
| 121313 | 56.5       | 14.91     |  |
| 121314 | 56.5       | 14.91     |  |
| 121315 | 57         | 15.02     |  |
| 121316 | 57         | 15.02     |  |
| 121317 | 56.5       | 14.91     |  |
| 121318 | 56.5       | 14.91     |  |
| 121319 | 56.5       | 14.91     |  |
| 121320 | 56.5       | 14.91     |  |
| 121321 | 56.5       | 14.91     |  |
| 121322 | 56.5       | 14.91     |  |
| 121323 | 56.5       | 14.91     |  |
| 121324 | 56.5       | 14.91     |  |
| 121325 | 56.5       | 14.91     |  |
| 121326 | 56.5       | 14.91     |  |
| 121327 | 56.5       | 14.91     |  |
| 121328 | 56.5       | 14.91     |  |
| 121329 | 56.5       | 14.91     |  |
| 121330 | 56.5       | 14.91     |  |
| 121331 | 56.5       | 14.91     |  |
| 121332 | 56.5       | 14.91     |  |
| 121333 | 56.5       | 14.91     |  |
| 121334 | 56.5       | 14.91     |  |
| 121335 | 56.5       | 14.91     |  |
| 121336 | 56.5       | 14.91     |  |
| 121337 | 56.5       | 14.91     |  |
| 121338 | 56.5       | 14.91     |  |
| 121339 | 56.5       | 14.91     |  |
| 121340 | 56.5       | 14.91     |  |
| 121341 | 56.5       | 14.91     |  |
| 121342 | 56.5       | 14.91     |  |
| 121343 | 56.5       | 14.91     |  |
| 121344 | 56.5       | 14.91     |  |
| 121345 | 56.5       | 14.91     |  |
| 121346 | 56.5       | 14.91     |  |
| 121347 | 56.5       | 14.91     |  |
| 121348 | 56.5       | 14.91     |  |
| 121349 | 56.5       | 14.91     |  |
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| 121367 | 56.5       | 14.91     |  |
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| 121370 | 56.5       | 14.91     |  |
| 121371 | 56.5       | 14.91     |  |
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| 121471 | 56.5       | 14.91     |  |
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| 121500 | 56.5       | 14.91     |  |
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| 121559 | 56.5       | 14.91     |  |
| 121560 | 56.5       | 14.91     |  |
| 121561 | 56.5       | 14.91     |  |
| 121562 | 56.5       | 14.91     |  |
| 121563 | 56.5       | 14.91     |  |
| 121564 | 56.5       | 14.91     |  |
| 121565 | 56.5       | 14.91     |  |
| 121566 | 56.5       | 14.91     |  |
| 121567 | 56.5       | 14.91     |  |
| 121568 | 56.5       | 14.91     |  |
| 121569 | 56.5       | 14.91     |  |
| 121570 | 56.5       | 14.91     |  |
| 121571 | 56.5       | 14.91     |  |
| 121572 | 56.5       | 14.91     |  |
| 121573 | 56.5       | 14.91     |  |
| 121574 | 56.5       | 14.91     |  |
| 121575 | 56.5       | 14.91     |  |
| 121576 | 56.5       | 14.91     |  |
| 121577 | 56.5       | 14.91     |  |
| 121578 | 56.5       | 14.91     |  |
| 121579 | 56.5       | 14.91     |  |
| 121580 | 56.5       | 14.91     |  |
| 121581 | 56.5       | 14.91     |  |
| 121582 | 56.5       | 14.91     |  |
| 121583 | 56.5       | 14.91     |  |
| 121584 | 56.5       | 14.       |  |

1930-1931

**Methodology**

## AC Line Station

Station #  
101214

MAX = 40.4

| Depth (m) | Max (m) | Min (m) |
|-----------|---------|---------|
| 0.00      | 39.4    | 39.4    |
| 1.00      | 39.4    | 39.4    |
| 2.00      | 39.4    | 39.4    |
| 3.00      | 39.4    | 39.4    |
| 4.00      | 39.4    | 39.4    |
| 5.00      | 39.4    | 39.4    |
| 6.00      | 39.4    | 39.4    |
| 7.00      | 39.4    | 39.4    |
| 8.00      | 39.4    | 39.4    |
| 9.00      | 39.4    | 39.4    |
| 10.00     | 39.4    | 39.4    |
| 11.00     | 39.4    | 39.4    |
| 12.00     | 39.4    | 39.4    |
| 13.00     | 39.4    | 39.4    |
| 14.00     | 39.4    | 39.4    |
| 15.00     | 39.4    | 39.4    |
| 16.00     | 39.4    | 39.4    |
| 17.00     | 39.4    | 39.4    |
| 18.00     | 39.4    | 39.4    |
| 19.00     | 39.4    | 39.4    |
| 20.00     | 39.4    | 39.4    |
| 21.00     | 39.4    | 39.4    |
| 22.00     | 39.4    | 39.4    |
| 23.00     | 39.4    | 39.4    |
| 24.00     | 39.4    | 39.4    |
| 25.00     | 39.4    | 39.4    |
| 26.00     | 39.4    | 39.4    |
| 27.00     | 39.4    | 39.4    |
| 28.00     | 39.4    | 39.4    |
| 29.00     | 39.4    | 39.4    |
| 30.00     | 39.4    | 39.4    |
| 31.00     | 39.4    | 39.4    |
| 32.00     | 39.4    | 39.4    |
| 33.00     | 39.4    | 39.4    |
| 34.00     | 39.4    | 39.4    |
| 35.00     | 39.4    | 39.4    |
| 36.00     | 39.4    | 39.4    |
| 37.00     | 39.4    | 39.4    |
| 38.00     | 39.4    | 39.4    |
| 39.00     | 39.4    | 39.4    |
| 40.00     | 39.4    | 39.4    |

## Regression Statistics

| Parameter           | Value   |
|---------------------|---------|
| Std Err of Est.     | 0.00000 |
| R-Squared           | 0.00000 |
| No. of Observations | 1       |
| Degrees of Freedom  | 0       |

Coefficient(s) 0.166950  
 Std Err of Coef. 0.000000

AC Line Station  
 Depth (m) 0.00 39.4 1.00 39.4 2.00 39.4 3.00 39.4 4.00 39.4 5.00 39.4 6.00 39.4 7.00 39.4 8.00 39.4 9.00 39.4 10.00 39.4 11.00 39.4 12.00 39.4 13.00 39.4 14.00 39.4 15.00 39.4 16.00 39.4 17.00 39.4 18.00 39.4 19.00 39.4 20.00 39.4 21.00 39.4 22.00 39.4 23.00 39.4 24.00 39.4 25.00 39.4 26.00 39.4 27.00 39.4 28.00 39.4 29.00 39.4 30.00 39.4 31.00 39.4 32.00 39.4 33.00 39.4 34.00 39.4 35.00 39.4 36.00 39.4 37.00 39.4 38.00 39.4 39.00 39.4 40.00 39.4

ANSWER

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|             |          |
|-------------|----------|
| 220 (10.0%) | 42.4     |
| 220 (cont)  | recorder |
| 1           | 5        |
| 501.2       | 37       |
| 116         | 43.5     |
| 116         | 1.5      |

| Year | Population | Area   | Density |
|------|------------|--------|---------|
| 1925 | 4,170      | 179.00 | 23.3    |
| 1930 | 4,200      | 179.00 | 23.5    |
| 1935 | 4,250      | 179.00 | 23.7    |
| 1940 | 4,300      | 179.00 | 24.0    |
| 1946 | 4,350      | 179.00 | 24.3    |
| 1955 | 4,400      | 179.00 | 24.6    |
| 1960 | 4,450      | 179.00 | 24.9    |
| 1965 | 4,500      | 179.00 | 25.2    |
| 1970 | 4,550      | 179.00 | 25.5    |
| 1975 | 4,600      | 179.00 | 25.8    |
| 1980 | 4,650      | 179.00 | 26.1    |
| 1985 | 4,700      | 179.00 | 26.4    |
| 1990 | 4,750      | 179.00 | 26.7    |
| 1995 | 4,800      | 179.00 | 27.0    |
| 2000 | 4,850      | 179.00 | 27.3    |
| 2005 | 4,900      | 179.00 | 27.6    |
| 2010 | 4,950      | 179.00 | 27.9    |
| 2015 | 5,000      | 179.00 | 28.2    |

Admittance of 100  
 Constant 1.0000000000000000  
 Std Err of Y Int 0.0000000000000000  
 Squared 0.0000000000000000  
 No. of Observations 9  
 Degrees of Freedom 8  
  
 t Coefficient 1.14005  
 Std Err of Coef 0.390289  
  
 Model requires TWO free vars.  
 The 1st = TSC Net x (' - 1800/1000')  
 where  
 The 2nd (negative) = 176.13  
 4020  
 The 3rd = 100.00

30. Pigeon Station  
Aug 13, '72  
1000 ft.

32. 1000 ft.  
Open land, 1000 ft.  
1000 ft.

Temp:  
1545 66.0 1000 ft.  
1550 66.5 1000 ft.  
1555 66.5 1000 ft.  
1600 66.5 1000 ft.  
1605 66.5 1000 ft.  
1610 66.5 1000 ft.  
1615 66.5 1000 ft.  
1620 66.5 1000 ft.  
1625 66.5 1000 ft.  
1630 66.5 1000 ft.  
1635 66.5 1000 ft.  
1640 66.5 1000 ft.  
1645 66.5 1000 ft.  
1650 66.5 1000 ft.  
1655 66.5 1000 ft.  
1700 66.5 1000 ft.  
1705 66.5 1000 ft.  
1710 66.5 1000 ft.  
1715 66.5 1000 ft.  
1720 66.5 1000 ft.  
1725 66.5 1000 ft.

Wet 66.5 1000 ft.

Windings 1000 ft.  
Temp:  
Std Dev of Temp 1.4 676  
Slope 0.01007  
No. of observations 2  
Degrees of freedom 1  
Correlation coefficient 0.85595  
Std Err of Corr 0.93121

NO. 1, AND 2, 1940

FEBRUARY 1940

1940

"P<sub>2</sub>""P<sub>1</sub>""C<sub>1</sub>""P<sub>2</sub>""P<sub>1</sub>""C<sub>1</sub>""P<sub>2</sub>""P<sub>1</sub>""C<sub>1</sub>""P<sub>2</sub>""P<sub>1</sub>""C<sub>1</sub>""P<sub>2</sub>""P<sub>1</sub>""C<sub>1</sub>""P<sub>2</sub>""P<sub>1</sub>""C<sub>1</sub>""P<sub>2</sub>""P<sub>1</sub>""C<sub>1</sub>""P<sub>2</sub>""P<sub>1</sub>""C<sub>1</sub>""P<sub>2</sub>""P<sub>1</sub>""C<sub>1</sub>""P<sub>2</sub>""P<sub>1</sub>""C<sub>1</sub>""P<sub>2</sub>""P<sub>1</sub>""C<sub>1</sub>""P<sub>2</sub>""P<sub>1</sub>""C<sub>1</sub>""P<sub>2</sub>""P<sub>1</sub>""C<sub>1</sub>""P<sub>2</sub>""P<sub>1</sub>""C<sub>1</sub>""P<sub>2</sub>""P<sub>1</sub>""C<sub>1</sub>""P<sub>2</sub>""P<sub>1</sub>""C<sub>1</sub>""P<sub>2</sub>""P<sub>1</sub>""C<sub>1</sub>"

## STATISTICS OF DATA

Number

Std Err of Y Est

S Squared

No. of Observations

Degrees of Freedom

Correlation Coeff.

Std Err of Correl.

"P<sub>2</sub>""P<sub>1</sub>""C<sub>1</sub>"

NO. 70000 Station

Date 6/1

Year 68

| SIGHTING |       |        | REFRACTION |
|----------|-------|--------|------------|
|          | TIME  | ANGLE  | ANGLE      |
| 1000     | 10:00 | 000.00 | 000.00     |
| 1010     | 10:10 | 000.00 | 000.00     |
| 1020     | 10:20 | 000.00 | 000.00     |
| 1030     | 10:30 | 000.00 | 000.00     |
| 1040     | 10:40 | 000.00 | 000.00     |
| 1050     | 10:50 | 000.00 | 000.00     |
| 1100     | 11:00 | 000.00 | 000.00     |
| 1110     | 11:10 | 000.00 | 000.00     |
| 1120     | 11:20 | 000.00 | 000.00     |
| 1130     | 11:30 | 000.00 | 000.00     |
| 1140     | 11:40 | 000.00 | 000.00     |
| 1150     | 11:50 | 000.00 | 000.00     |
| 1200     | 12:00 | 000.00 | 000.00     |
| 1210     | 12:10 | 000.00 | 000.00     |
| 1220     | 12:20 | 000.00 | 000.00     |
| 1230     | 12:30 | 000.00 | 000.00     |
| 1240     | 12:40 | 000.00 | 000.00     |
| 1250     | 12:50 | 000.00 | 000.00     |
| 1300     | 13:00 | 000.00 | 000.00     |
| 1310     | 13:10 | 000.00 | 000.00     |
| 1320     | 13:20 | 000.00 | 000.00     |
| 1330     | 13:30 | 000.00 | 000.00     |
| 1340     | 13:40 | 000.00 | 000.00     |
| 1350     | 13:50 | 000.00 | 000.00     |
| 1400     | 14:00 | 000.00 | 000.00     |
| 1410     | 14:10 | 000.00 | 000.00     |
| 1420     | 14:20 | 000.00 | 000.00     |
| 1430     | 14:30 | 000.00 | 000.00     |
| 1440     | 14:40 | 000.00 | 000.00     |
| 1450     | 14:50 | 000.00 | 000.00     |
| 1500     | 15:00 | 000.00 | 000.00     |
| 1510     | 15:10 | 000.00 | 000.00     |
| 1520     | 15:20 | 000.00 | 000.00     |
| 1530     | 15:30 | 000.00 | 000.00     |
| 1540     | 15:40 | 000.00 | 000.00     |
| 1550     | 15:50 | 000.00 | 000.00     |
| 1600     | 16:00 | 000.00 | 000.00     |
| 1610     | 16:10 | 000.00 | 000.00     |
| 1620     | 16:20 | 000.00 | 000.00     |
| 1630     | 16:30 | 000.00 | 000.00     |
| 1640     | 16:40 | 000.00 | 000.00     |
| 1650     | 16:50 | 000.00 | 000.00     |
| 1700     | 17:00 | 000.00 | 000.00     |
| 1710     | 17:10 | 000.00 | 000.00     |
| 1720     | 17:20 | 000.00 | 000.00     |
| 1730     | 17:30 | 000.00 | 000.00     |
| 1740     | 17:40 | 000.00 | 000.00     |
| 1750     | 17:50 | 000.00 | 000.00     |
| 1800     | 18:00 | 000.00 | 000.00     |
| 1810     | 18:10 | 000.00 | 000.00     |
| 1820     | 18:20 | 000.00 | 000.00     |
| 1830     | 18:30 | 000.00 | 000.00     |
| 1840     | 18:40 | 000.00 | 000.00     |
| 1850     | 18:50 | 000.00 | 000.00     |
| 1900     | 19:00 | 000.00 | 000.00     |
| 1910     | 19:10 | 000.00 | 000.00     |
| 1920     | 19:20 | 000.00 | 000.00     |
| 1930     | 19:30 | 000.00 | 000.00     |
| 1940     | 19:40 | 000.00 | 000.00     |
| 1950     | 19:50 | 000.00 | 000.00     |
| 2000     | 20:00 | 000.00 | 000.00     |
| 2010     | 20:10 | 000.00 | 000.00     |
| 2020     | 20:20 | 000.00 | 000.00     |
| 2030     | 20:30 | 000.00 | 000.00     |
| 2040     | 20:40 | 000.00 | 000.00     |
| 2050     | 20:50 | 000.00 | 000.00     |
| 2100     | 21:00 | 000.00 | 000.00     |
| 2110     | 21:10 | 000.00 | 000.00     |
| 2120     | 21:20 | 000.00 | 000.00     |
| 2130     | 21:30 | 000.00 | 000.00     |
| 2140     | 21:40 | 000.00 | 000.00     |
| 2150     | 21:50 | 000.00 | 000.00     |
| 2200     | 22:00 | 000.00 | 000.00     |
| 2210     | 22:10 | 000.00 | 000.00     |
| 2220     | 22:20 | 000.00 | 000.00     |
| 2230     | 22:30 | 000.00 | 000.00     |
| 2240     | 22:40 | 000.00 | 000.00     |
| 2250     | 22:50 | 000.00 | 000.00     |
| 2300     | 23:00 | 000.00 | 000.00     |
| 2310     | 23:10 | 000.00 | 000.00     |
| 2320     | 23:20 | 000.00 | 000.00     |
| 2330     | 23:30 | 000.00 | 000.00     |
| 2340     | 23:40 | 000.00 | 000.00     |
| 2350     | 23:50 | 000.00 | 000.00     |
| 2400     | 24:00 | 000.00 | 000.00     |
| 2410     | 24:10 | 000.00 | 000.00     |
| 2420     | 24:20 | 000.00 | 000.00     |
| 2430     | 24:30 | 000.00 | 000.00     |
| 2440     | 24:40 | 000.00 | 000.00     |
| 2450     | 24:50 | 000.00 | 000.00     |
| 2500     | 25:00 | 000.00 | 000.00     |
| 2510     | 25:10 | 000.00 | 000.00     |
| 2520     | 25:20 | 000.00 | 000.00     |
| 2530     | 25:30 | 000.00 | 000.00     |
| 2540     | 25:40 | 000.00 | 000.00     |
| 2550     | 25:50 | 000.00 | 000.00     |
| 2600     | 26:00 | 000.00 | 000.00     |
| 2610     | 26:10 | 000.00 | 000.00     |
| 2620     | 26:20 | 000.00 | 000.00     |
| 2630     | 26:30 | 000.00 | 000.00     |
| 2640     | 26:40 | 000.00 | 000.00     |
| 2650     | 26:50 | 000.00 | 000.00     |
| 2700     | 27:00 | 000.00 | 000.00     |
| 2710     | 27:10 | 000.00 | 000.00     |
| 2720     | 27:20 | 000.00 | 000.00     |
| 2730     | 27:30 | 000.00 | 000.00     |
| 2740     | 27:40 | 000.00 | 000.00     |
| 2750     | 27:50 | 000.00 | 000.00     |
| 2800     | 28:00 | 000.00 | 000.00     |
| 2810     | 28:10 | 000.00 | 000.00     |
| 2820     | 28:20 | 000.00 | 000.00     |
| 2830     | 28:30 | 000.00 | 000.00     |
| 2840     | 28:40 | 000.00 | 000.00     |
| 2850     | 28:50 | 000.00 | 000.00     |
| 2900     | 29:00 | 000.00 | 000.00     |
| 2910     | 29:10 | 000.00 | 000.00     |
| 2920     | 29:20 | 000.00 | 000.00     |
| 2930     | 29:30 | 000.00 | 000.00     |
| 2940     | 29:40 | 000.00 | 000.00     |
| 2950     | 29:50 | 000.00 | 000.00     |
| 3000     | 30:00 | 000.00 | 000.00     |
| 3010     | 30:10 | 000.00 | 000.00     |
| 3020     | 30:20 | 000.00 | 000.00     |
| 3030     | 30:30 | 000.00 | 000.00     |
| 3040     | 30:40 | 000.00 | 000.00     |
| 3050     | 30:50 | 000.00 | 000.00     |
| 3100     | 31:00 | 000.00 | 000.00     |
| 3110     | 31:10 | 000.00 | 000.00     |
| 3120     | 31:20 | 000.00 | 000.00     |
| 3130     | 31:30 | 000.00 | 000.00     |
| 3140     | 31:40 | 000.00 | 000.00     |
| 3150     | 31:50 | 000.00 | 000.00     |
| 3200     | 32:00 | 000.00 | 000.00     |
| 3210     | 32:10 | 000.00 | 000.00     |
| 3220     | 32:20 | 000.00 | 000.00     |
| 3230     | 32:30 | 000.00 | 000.00     |
| 3240     | 32:40 | 000.00 | 000.00     |
| 3250     | 32:50 | 000.00 | 000.00     |
| 3300     | 33:00 | 000.00 | 000.00     |
| 3310     | 33:10 | 000.00 | 000.00     |
| 3320     | 33:20 | 000.00 | 000.00     |
| 3330     | 33:30 | 000.00 | 000.00     |
| 3340     | 33:40 | 000.00 | 000.00     |
| 3350     | 33:50 | 000.00 | 000.00     |
| 3400     | 34:00 | 000.00 | 000.00     |
| 3410     | 34:10 | 000.00 | 000.00     |
| 3420     | 34:20 | 000.00 | 000.00     |
| 3430     | 34:30 | 000.00 | 000.00     |
| 3440     | 34:40 | 000.00 | 000.00     |
| 3450     | 34:50 | 000.00 | 000.00     |
| 3500     | 35:00 | 000.00 | 000.00     |
| 3510     | 35:10 | 000.00 | 000.00     |
| 3520     | 35:20 | 000.00 | 000.00     |
| 3530     | 35:30 | 000.00 | 000.00     |
| 3540     | 35:40 | 000.00 | 000.00     |
| 3550     | 35:50 | 000.00 | 000.00     |
| 3600     | 36:00 | 000.00 | 000.00     |
| 3610     | 36:10 | 000.00 | 000.00     |
| 3620     | 36:20 | 000.00 | 000.00     |
| 3630     | 36:30 | 000.00 | 000.00     |
| 3640     | 36:40 | 000.00 | 000.00     |
| 3650     | 36:50 | 000.00 | 000.00     |
| 3700     | 37:00 | 000.00 | 000.00     |
| 3710     | 37:10 | 000.00 | 000.00     |
| 3720     | 37:20 | 000.00 | 000.00     |
| 3730     | 37:30 | 000.00 | 000.00     |
| 3740     | 37:40 | 000.00 | 000.00     |
| 3750     | 37:50 | 000.00 | 000.00     |
| 3800     | 38:00 | 000.00 | 000.00     |
| 3810     | 38:10 | 000.00 | 000.00     |
| 3820     | 38:20 | 000.00 | 000.00     |
| 3830     | 38:30 | 000.00 | 000.00     |
| 3840     | 38:40 | 000.00 | 000.00     |
| 3850     | 38:50 | 000.00 | 000.00     |
| 3900     | 39:00 | 000.00 | 000.00     |
| 3910     | 39:10 | 000.00 | 000.00     |
| 3920     | 39:20 | 000.00 | 000.00     |
| 3930     | 39:30 | 000.00 | 000.00     |
| 3940     | 39:40 | 000.00 | 000.00     |
| 3950     | 39:50 | 000.00 | 000.00     |
| 4000     | 40:00 | 000.00 | 000.00     |
| 4010     | 40:10 | 000.00 | 000.00     |
| 4020     | 40:20 | 000.00 | 000.00     |
| 4030     | 40:30 | 000.00 | 000.00     |
| 4040     | 40:40 | 000.00 | 000.00     |
| 4050     | 40:50 | 000.00 | 000.00     |
| 4100     | 41:00 | 000.00 | 000.00     |
| 4110     | 41:10 | 000.00 | 000.00     |
| 4120     | 41:20 | 000.00 | 000.00     |
| 4130     | 41:30 | 000.00 | 000.00     |
| 4140     | 41:40 | 000.00 | 000.00     |
| 4150     | 41:50 | 000.00 | 000.00     |
| 4200     | 42:00 | 000.00 | 000.00     |
| 4210     | 42:10 | 000.00 | 000.00     |
| 4220     | 42:20 | 000.00 | 000.00     |
| 4230     | 42:30 | 000.00 | 000.00     |
| 4240     | 42:40 | 000.00 | 000.00     |
| 4250     | 42:50 | 000.00 | 000.00     |
| 4300     | 43:00 | 000.00 | 000.00     |
| 4310     | 43:10 | 000.00 | 000.00     |
| 4320     | 43:20 | 000.00 | 000.00     |
| 4330     | 43:30 | 000.00 | 000.00     |
| 4340     | 43:40 | 000.00 | 000.00     |
| 4350     | 43:50 | 000.00 | 000.00     |
| 4400     | 44:00 | 000.00 | 000.00     |
| 4410     | 44:10 | 000.00 | 000.00     |
| 4420     | 44:20 | 000.00 | 000.00     |
| 4430     | 44:30 | 000.00 | 000.00     |
| 4440     | 44:40 | 000.00 | 000.00     |
| 4450     | 44:50 | 000.00 | 000.00     |
| 4500     | 45:00 | 000.00 | 000.00     |
| 4510     | 45:10 | 000.00 | 000.00     |
| 4520     | 45:20 | 000.00 | 000.00     |
| 4530     | 45:30 | 000.00 | 000.00     |
| 4540     | 45:40 | 000.00 | 000.00     |
| 4550     | 45:50 | 000.00 | 000.00     |
| 4600     | 46:00 | 000.00 | 000.00     |
| 4610     | 46:10 | 000.00 | 000.00     |
| 4620     | 46:20 | 000.00 | 000.00     |
| 4630     | 46:30 | 000.00 | 000.00     |
| 4640     | 46:40 | 000.00 | 000.00     |
| 4650     | 46:50 | 000.00 | 000.00     |
| 4700     | 47:00 | 000.00 | 000.00     |
| 4710     | 47:10 | 000.00 | 000.00     |
| 4720     | 47:20 | 000.00 | 000.00     |
| 4730     | 47:30 | 000.00 | 000.00     |
| 4740     | 47:40 | 000.00 | 000.00     |
| 4750     | 47:50 | 000.00 | 000.00     |
| 4800     | 48:00 | 000.00 | 000.00     |
| 4810     | 48:10 | 000.00 | 000.00     |
| 4820     | 48:20 | 000.00 | 000.00     |
| 4830     | 48:30 | 000.00 | 000.00     |
| 4840     | 48:40 | 000.00 | 000.00     |
| 4850     | 48:50 | 000.00 | 000.00     |
| 4900     | 49:00 | 000.00 | 000.00     |
| 4910     | 49:10 | 000.00 | 000.00     |
| 4920     | 49:20 | 000.00 | 000.00     |
| 4930     | 49:30 | 000.00 | 000.00     |
| 4940     | 49:40 | 000.00 | 000.00     |
| 4950     | 49:50 | 000.00 | 000.00     |
| 5000     | 50:00 | 000.00 | 000.00     |
| 5010     | 50:10 | 000.00 | 000.00     |
| 5020     | 50:20 | 000.00 | 0          |

## ING Cane Statistics

Volume 12

A.D. 1921

X<sub>0</sub> = 10.1Y<sub>0</sub> = 100.000

|         | X <sub>0</sub> | Y <sub>0</sub> |
|---------|----------------|----------------|
| 1000    | 10.1           | 100.000        |
| 10000   | 10.1           | 100.000        |
| 100000  | 10.1           | 100.000        |
| 1000000 | 10.1           | 100.000        |

## Regression Coefficients

| Constant            | Regression Coefficient |
|---------------------|------------------------|
| Std Err of Y Est.   | 0.000000               |
| S Squared           | 0.000000               |
| No. of Observations | 1                      |
| Degrees of Freedom  | 0                      |

S Squared = 0.000000  
Std Err of Est. = 0.000000

| REGRESSION | X <sub>0</sub> | Y <sub>0</sub> |
|------------|----------------|----------------|
| 1000       | 10.1           | 100.000        |
| 10000      | 10.1           | 100.000        |
| 100000     | 10.1           | 100.000        |
| 1000000    | 10.1           | 100.000        |

X<sub>0</sub> = 10.1  
Y<sub>0</sub> = 100.000  
S Squared = 0.000000  
Std Err of Est. = 0.000000

## MC Cross Section

Region II

100 GeV



Sect 1

|      |     |        |
|------|-----|--------|
| 1005 | 1.1 | 150.00 |
| 1010 | 1.1 | 150.00 |
| 1015 | 1.1 | 150.00 |
| 1020 | 1.1 | 150.00 |
| 1025 | 1.1 | 150.00 |
| 1030 | 1.1 | 150.00 |
| 1035 | 1.1 | 150.00 |
| 1040 | 1.1 | 150.00 |
| 1045 | 1.1 | 150.00 |
| 1050 | 1.1 | 150.00 |
| 1055 | 1.1 | 150.00 |
| 1060 | 1.1 | 150.00 |
| 1065 | 1.1 | 150.00 |
| 1070 | 1.1 | 150.00 |
| 1075 | 1.1 | 150.00 |
| 1080 | 1.1 | 150.00 |
| 1085 | 1.1 | 150.00 |
| 1090 | 1.1 | 150.00 |
| 1095 | 1.1 | 150.00 |
| 1100 | 1.1 | 150.00 |

1005 1.1 150.00

Legend:  
 Std Err of Fit = 0.47500  
 2 Measured  
 1000 Observations  
 Degrees of Freedom = 2  
  
 F Coefficient = 0.00050  
 Std Err of Fit = 0.0001

F Coefficient = 0.00050  
Std Err of Fit = 0.0001

W.C. T. 306 Section  
Pages 42  
12-12-29

|      | TMC for 620 | 124.7                                      |
|------|-------------|--|
|      | Span 600    | 124.7                                      |
| 1920 | 43.5        | 161.41                                     |
| 1925 | 43.5        | 160.41                                     |
| 1930 | 43.5        | 172.39                                     |
| 1935 | 43.5        | 161.61                                     |
| 1940 | 43          | 161.61                                     |
| 1945 | 43.5        | 172.39                                     |
| 1950 | 43          | 161.61                                     |
| 1955 | 43.5        | 172.39                                     |
| 1960 | 43          | 161.61                                     |
| 1965 | 43.5        | 172.39                                     |
| 1970 | 43          | 161.61                                     |
| 1975 | 43.5        | 172.39                                     |
| 1980 | 43          | 161.61                                     |
| 1985 | 43.5        | 172.39                                     |
| 1990 | 43          | 161.61                                     |
| 1995 | 43.5        | 172.39                                     |
| 2000 | 43          | 161.61                                     |
| 2005 | 43.5        | 172.39                                     |
| 2010 | 43          | 161.61                                     |
| 2015 | 43.5        | 172.39                                     |
| 2020 | 43.5        | 161.41                                     |
| 2025 | 43          | 161.61                                     |
| 2030 | 43          | 161.61                                     |
| 2035 | 43.5        | 172.39                                     |
| 2040 | 43.5        | 161.61                                     |
| 2045 | 43          | 161.61                                     |
|      |             | Degrees of Freedom                         |
|      |             | 124.7                                      |
|      |             | Old Err of Y Est                           |
|      |             | 3 Degrees                                  |
|      |             | No. of Observations                        |
|      |             | Degrees of Freedom                         |
|      |             | Y Coeff. (real) = 0.941624                 |
|      |             | Std Err of Est. = 0.0022                   |
|      |             |  |
|      |             | Least desired TMC for 620:                 |
|      |             | The desired TMC will be 117.07000000000001 |
|      |             | where                                      |
|      |             | TMC will fluctuate = 116.11                |
|      |             | 117.07                                     |
|      |             | 117.93                                     |
|      |             | 118.79                                     |

NG Type Station  
Depth 42  
Lat 32° 2'

|                              | 17    | 18    | 19    |
|------------------------------|-------|-------|-------|
| Depth (m)                    | 17.00 | 17.00 | 17.00 |
| Temperature                  | 17.00 | 17.00 | 17.00 |
| Conductivity                 | 17.00 | 17.00 | 17.00 |
| Turbidity                    | 17.00 | 17.00 | 17.00 |
| Salinity                     | 17.00 | 17.00 | 17.00 |
| Chlorophyll                  | 17.00 | 17.00 | 17.00 |
| Transparency                 | 17.00 | 17.00 | 17.00 |
| No. of Observations          | 1     | 1     | 1     |
| Degrees of Freedom           | 0     | 0     | 0     |
| S. Significant(s) - 4 17.001 |       |       |       |
| S. Left Out(s) - 3 17.000    |       |       |       |
| 17.00 17.00 17.00            |       |       |       |

C-14 and C-13 data

LOGITECH  
PC-1300

100 120

| Yield (%) | Yield (%) |
|-----------|-----------|
| 0         | 4         |
| 5         | 15.5      |
| 10        | 34        |
| 15        | 54        |
| 20        | 73        |

Temperature (°C)

| Yield (%) | Yield (%) |
|-----------|-----------|
| 0         | 0         |
| 2         | 0.71      |
| 4         | 0.71      |
| 6         | 0.71      |
| 8         | 0.71      |
| 10        | 0.71      |
| 12        | 0.71      |
| 14        | 0.71      |
| 16        | 0.71      |
| 18        | 0.71      |
| 20        | 0.71      |
| 22        | 0.71      |
| 24        | 0.71      |
| 26        | 0.71      |
| 28        | 0.71      |
| 30        | 0.71      |
| 32        | 0.71      |
| 34        | 0.71      |
| 36        | 0.71      |
| 38        | 0.71      |
| 40        | 0.71      |
| 42        | 0.71      |
| 44        | 0.71      |
| 46        | 0.71      |
| 48        | 0.71      |
| 50        | 0.71      |
| 52        | 0.71      |
| 54        | 0.71      |
| 56        | 0.71      |
| 58        | 0.71      |
| 60        | 0.71      |
| 62        | 0.71      |
| 64        | 0.71      |
| 66        | 0.71      |
| 68        | 0.71      |
| 70        | 0.71      |
| 72        | 0.71      |
| 74        | 0.71      |
| 76        | 0.71      |
| 78        | 0.71      |
| 80        | 0.71      |
| 82        | 0.71      |
| 84        | 0.71      |
| 86        | 0.71      |
| 88        | 0.71      |
| 90        | 0.71      |
| 92        | 0.71      |
| 94        | 0.71      |
| 96        | 0.71      |
| 98        | 0.71      |
| 100       | 0.71      |

1. Correlation coefficient = 0.11  
 Std Err of Corr = 0.093273

100 120

1990-1991  
1991-1992



CNC Gauge Station  
Engine #2  
(N-11-6)

|             | 754    | 120    |
|-------------|--------|--------|
| SPAR 1.00   | 100.00 | 100.00 |
| Calibration | 0      | 0      |
| 1st         | 0      | 0      |
| 2nd         | 0      | 0      |
| 3rd         | 0      | 0      |
| 4th         | 0      | 0      |
| 5th         | 0      | 0      |
| 6th         | 0      | 0      |
| 7th         | 0      | 0      |
| 8th         | 0      | 0      |
| 9th         | 0      | 0      |
| 10th        | 0      | 0      |
| 11th        | 0      | 0      |
| 12th        | 0      | 0      |
| 13th        | 0      | 0      |
| 14th        | 0      | 0      |
| 15th        | 0      | 0      |
| 16th        | 0      | 0      |
| 17th        | 0      | 0      |
| 18th        | 0      | 0      |
| 19th        | 0      | 0      |
| 20th        | 0      | 0      |
| 21st        | 0      | 0      |
| 22nd        | 0      | 0      |
| 23rd        | 0      | 0      |
| 24th        | 0      | 0      |
| 25th        | 0      | 0      |
| 26th        | 0      | 0      |
| 27th        | 0      | 0      |
| 28th        | 0      | 0      |
| 29th        | 0      | 0      |
| 30th        | 0      | 0      |
| 31st        | 0      | 0      |
| 32nd        | 0      | 0      |
| 33rd        | 0      | 0      |
| 34th        | 0      | 0      |
| 35th        | 0      | 0      |
| 36th        | 0      | 0      |
| 37th        | 0      | 0      |
| 38th        | 0      | 0      |
| 39th        | 0      | 0      |
| 40th        | 0      | 0      |
| 41st        | 0      | 0      |
| 42nd        | 0      | 0      |
| 43rd        | 0      | 0      |
| 44th        | 0      | 0      |
| 45th        | 0      | 0      |
| 46th        | 0      | 0      |
| 47th        | 0      | 0      |
| 48th        | 0      | 0      |
| 49th        | 0      | 0      |
| 50th        | 0      | 0      |
| 51st        | 0      | 0      |
| 52nd        | 0      | 0      |
| 53rd        | 0      | 0      |
| 54th        | 0      | 0      |
| 55th        | 0      | 0      |
| 56th        | 0      | 0      |
| 57th        | 0      | 0      |
| 58th        | 0      | 0      |
| 59th        | 0      | 0      |
| 60th        | 0      | 0      |
| 61st        | 0      | 0      |
| 62nd        | 0      | 0      |
| 63rd        | 0      | 0      |
| 64th        | 0      | 0      |
| 65th        | 0      | 0      |
| 66th        | 0      | 0      |
| 67th        | 0      | 0      |
| 68th        | 0      | 0      |
| 69th        | 0      | 0      |
| 70th        | 0      | 0      |
| 71st        | 0      | 0      |
| 72nd        | 0      | 0      |
| 73rd        | 0      | 0      |
| 74th        | 0      | 0      |
| 75th        | 0      | 0      |
| 76th        | 0      | 0      |
| 77th        | 0      | 0      |
| 78th        | 0      | 0      |
| 79th        | 0      | 0      |
| 80th        | 0      | 0      |
| 81st        | 0      | 0      |
| 82nd        | 0      | 0      |
| 83rd        | 0      | 0      |
| 84th        | 0      | 0      |
| 85th        | 0      | 0      |
| 86th        | 0      | 0      |
| 87th        | 0      | 0      |
| 88th        | 0      | 0      |
| 89th        | 0      | 0      |
| 90th        | 0      | 0      |
| 91st        | 0      | 0      |
| 92nd        | 0      | 0      |
| 93rd        | 0      | 0      |
| 94th        | 0      | 0      |
| 95th        | 0      | 0      |
| 96th        | 0      | 0      |
| 97th        | 0      | 0      |
| 98th        | 0      | 0      |
| 99th        | 0      | 0      |
| 100th       | 0      | 0      |
| 101st       | 0      | 0      |
| 102nd       | 0      | 0      |
| 103rd       | 0      | 0      |
| 104th       | 0      | 0      |
| 105th       | 0      | 0      |
| 106th       | 0      | 0      |
| 107th       | 0      | 0      |
| 108th       | 0      | 0      |
| 109th       | 0      | 0      |
| 110th       | 0      | 0      |
| 111th       | 0      | 0      |
| 112th       | 0      | 0      |
| 113th       | 0      | 0      |
| 114th       | 0      | 0      |
| 115th       | 0      | 0      |
| 116th       | 0      | 0      |
| 117th       | 0      | 0      |
| 118th       | 0      | 0      |
| 119th       | 0      | 0      |
| 120th       | 0      | 0      |
| 121st       | 0      | 0      |
| 122nd       | 0      | 0      |
| 123rd       | 0      | 0      |
| 124th       | 0      | 0      |
| 125th       | 0      | 0      |
| 126th       | 0      | 0      |
| 127th       | 0      | 0      |
| 128th       | 0      | 0      |
| 129th       | 0      | 0      |
| 130th       | 0      | 0      |
| 131st       | 0      | 0      |
| 132nd       | 0      | 0      |
| 133rd       | 0      | 0      |
| 134th       | 0      | 0      |
| 135th       | 0      | 0      |
| 136th       | 0      | 0      |
| 137th       | 0      | 0      |
| 138th       | 0      | 0      |
| 139th       | 0      | 0      |
| 140th       | 0      | 0      |
| 141st       | 0      | 0      |
| 142nd       | 0      | 0      |
| 143rd       | 0      | 0      |
| 144th       | 0      | 0      |
| 145th       | 0      | 0      |
| 146th       | 0      | 0      |
| 147th       | 0      | 0      |
| 148th       | 0      | 0      |
| 149th       | 0      | 0      |
| 150th       | 0      | 0      |
| 151st       | 0      | 0      |
| 152nd       | 0      | 0      |
| 153rd       | 0      | 0      |
| 154th       | 0      | 0      |
| 155th       | 0      | 0      |
| 156th       | 0      | 0      |
| 157th       | 0      | 0      |
| 158th       | 0      | 0      |
| 159th       | 0      | 0      |
| 160th       | 0      | 0      |
| 161st       | 0      | 0      |
| 162nd       | 0      | 0      |
| 163rd       | 0      | 0      |
| 164th       | 0      | 0      |
| 165th       | 0      | 0      |
| 166th       | 0      | 0      |
| 167th       | 0      | 0      |
| 168th       | 0      | 0      |
| 169th       | 0      | 0      |
| 170th       | 0      | 0      |
| 171st       | 0      | 0      |
| 172nd       | 0      | 0      |
| 173rd       | 0      | 0      |
| 174th       | 0      | 0      |
| 175th       | 0      | 0      |
| 176th       | 0      | 0      |
| 177th       | 0      | 0      |
| 178th       | 0      | 0      |
| 179th       | 0      | 0      |
| 180th       | 0      | 0      |
| 181st       | 0      | 0      |
| 182nd       | 0      | 0      |
| 183rd       | 0      | 0      |
| 184th       | 0      | 0      |
| 185th       | 0      | 0      |
| 186th       | 0      | 0      |
| 187th       | 0      | 0      |
| 188th       | 0      | 0      |
| 189th       | 0      | 0      |
| 190th       | 0      | 0      |
| 191st       | 0      | 0      |
| 192nd       | 0      | 0      |
| 193rd       | 0      | 0      |
| 194th       | 0      | 0      |
| 195th       | 0      | 0      |
| 196th       | 0      | 0      |
| 197th       | 0      | 0      |
| 198th       | 0      | 0      |
| 199th       | 0      | 0      |
| 200th       | 0      | 0      |
| 201st       | 0      | 0      |
| 202nd       | 0      | 0      |
| 203rd       | 0      | 0      |
| 204th       | 0      | 0      |
| 205th       | 0      | 0      |
| 206th       | 0      | 0      |
| 207th       | 0      | 0      |
| 208th       | 0      | 0      |
| 209th       | 0      | 0      |
| 210th       | 0      | 0      |
| 211st       | 0      | 0      |
| 212nd       | 0      | 0      |
| 213rd       | 0      | 0      |
| 214th       | 0      | 0      |
| 215th       | 0      | 0      |
| 216th       | 0      | 0      |
| 217th       | 0      | 0      |
| 218th       | 0      | 0      |
| 219th       | 0      | 0      |
| 220th       | 0      | 0      |
| 221st       | 0      | 0      |
| 222nd       | 0      | 0      |
| 223rd       | 0      | 0      |
| 224th       | 0      | 0      |
| 225th       | 0      | 0      |
| 226th       | 0      | 0      |
| 227th       | 0      | 0      |
| 228th       | 0      | 0      |
| 229th       | 0      | 0      |
| 230th       | 0      | 0      |
| 231st       | 0      | 0      |
| 232nd       | 0      | 0      |
| 233rd       | 0      | 0      |
| 234th       | 0      | 0      |
| 235th       | 0      | 0      |
| 236th       | 0      | 0      |
| 237th       | 0      | 0      |
| 238th       | 0      | 0      |
| 239th       | 0      | 0      |
| 240th       | 0      | 0      |
| 241st       | 0      | 0      |
| 242nd       | 0      | 0      |
| 243rd       | 0      | 0      |
| 244th       | 0      | 0      |
| 245th       | 0      | 0      |
| 246th       | 0      | 0      |
| 247th       | 0      | 0      |
| 248th       | 0      | 0      |
| 249th       | 0      | 0      |
| 250th       | 0      | 0      |
| 251st       | 0      | 0      |
| 252nd       | 0      | 0      |
| 253rd       | 0      | 0      |
| 254th       | 0      | 0      |
| 255th       | 0      | 0      |
| 256th       | 0      | 0      |
| 257th       | 0      | 0      |
| 258th       | 0      | 0      |
| 259th       | 0      | 0      |
| 260th       | 0      | 0      |
| 261st       | 0      | 0      |
| 262nd       | 0      | 0      |
| 263rd       | 0      | 0      |
| 264th       | 0      | 0      |
| 265th       | 0      | 0      |
| 266th       | 0      | 0      |
| 267th       | 0      | 0      |
| 268th       | 0      | 0      |
| 269th       | 0      | 0      |
| 270th       | 0      | 0      |
| 271st       | 0      | 0      |
| 272nd       | 0      | 0      |
| 273rd       | 0      | 0      |
| 274th       | 0      | 0      |
| 275th       | 0      | 0      |
| 276th       | 0      | 0      |
| 277th       | 0      | 0      |
| 278th       | 0      | 0      |
| 279th       | 0      | 0      |
| 280th       | 0      | 0      |
| 281st       | 0      | 0      |
| 282nd       | 0      | 0      |
| 283rd       | 0      | 0      |
| 284th       | 0      | 0      |
| 285th       | 0      | 0      |
| 286th       | 0      | 0      |
| 287th       | 0      | 0      |
| 288th       | 0      | 0      |
| 289th       | 0      | 0      |
| 290th       | 0      | 0      |
| 291st       | 0      | 0      |
| 292nd       | 0      | 0      |
| 293rd       | 0      | 0      |
| 294th       | 0      | 0      |
| 295th       | 0      | 0      |
| 296th       | 0      | 0      |
| 297th       | 0      | 0      |
| 298th       | 0      | 0      |
| 299th       | 0      | 0      |
| 300th       | 0      | 0      |
| 301st       | 0      | 0      |
| 302nd       | 0      | 0      |
| 303rd       | 0      | 0      |
| 304th       | 0      | 0      |
| 305th       | 0      | 0      |
| 306th       | 0      | 0      |
| 307th       | 0      | 0      |
| 308th       | 0      | 0      |
| 309th       | 0      | 0      |
| 310th       | 0      | 0      |
| 311st       | 0      | 0      |
| 312nd       | 0      | 0      |
| 313rd       | 0      | 0      |
| 314th       | 0      | 0      |
| 315th       | 0      | 0      |
| 316th       | 0      | 0      |
| 317th       | 0      | 0      |
| 318th       | 0      | 0      |
| 319th       | 0      | 0      |
| 320th       | 0      | 0      |
| 321st       | 0      | 0      |
| 322nd       | 0      | 0      |
| 323rd       | 0      | 0      |
| 324th       | 0      | 0      |
| 325th       | 0      | 0      |
| 326th       | 0      | 0      |
| 327th       | 0      | 0      |
| 328th       | 0      | 0      |
| 329th       | 0      | 0      |
| 330th       | 0      | 0      |
| 331st       | 0      | 0      |
| 332nd       | 0      | 0      |
| 333rd       | 0      | 0      |
| 334th       | 0      | 0      |
| 335th       | 0      | 0      |
| 336th       | 0      | 0      |
| 337th       | 0      | 0      |
| 338th       | 0      | 0      |
| 339th       | 0      | 0      |
| 340th       | 0      | 0      |
| 341st       | 0      | 0      |
| 342nd       | 0      | 0      |
| 343rd       | 0      | 0      |
| 344th       | 0      | 0      |
| 345th       | 0      | 0      |
| 346th       | 0      | 0      |
| 347th       | 0      | 0      |
| 348th       | 0      | 0      |
| 349th       | 0      | 0      |
| 350th       | 0      | 0      |
| 351st       | 0      | 0      |
| 352nd       | 0      | 0      |
| 353rd       | 0      | 0      |
| 354th       | 0      | 0      |
| 355th       | 0      | 0      |
| 356th       | 0      | 0      |
| 357th       | 0      | 0      |
| 358th       | 0      | 0      |
| 359th       | 0      | 0      |
| 360th       | 0      | 0      |
| 361st       | 0      | 0      |
| 362nd       | 0      | 0      |
| 363rd       | 0      | 0      |
| 364th       | 0      | 0      |
| 365th       | 0      | 0      |
| 366th       | 0      | 0      |
| 367th       | 0      | 0      |
| 368th       | 0      | 0      |
| 369th       | 0      | 0      |
| 370th       | 0      | 0      |
| 371st       | 0      | 0      |
| 372nd       | 0      | 0      |
| 373rd       | 0      | 0      |
| 374th       | 0      | 0      |
| 375th       | 0      | 0      |
| 376th       | 0      | 0      |
| 377th       | 0      | 0      |
| 378th       | 0      | 0      |
| 379th       | 0      | 0      |
| 380th       | 0      | 0      |
| 381st       | 0      | 0      |
| 382nd       | 0      | 0      |
| 383rd       | 0      | 0      |
| 384th       | 0      | 0      |
| 385th       | 0      | 0      |
| 386th       | 0      | 0      |
| 387th       | 0      | 0      |
| 388th       | 0      | 0      |
| 389th       | 0      | 0      |
| 390th       | 0      | 0      |
| 391st       | 0      | 0      |
| 392nd       | 0      | 0      |
| 393rd       | 0      | 0      |
| 394th       | 0      | 0      |
| 395th       | 0      | 0      |
| 396th       | 0      | 0      |
| 397th       | 0      | 0      |
| 398th       | 0      | 0      |
| 399th       | 0      | 0      |
| 400th       | 0      | 0      |
| 401st       | 0      | 0      |
| 402nd       | 0      | 0      |
| 403rd       | 0      | 0      |
| 40          |        |        |



APPENDIX E  
CALIBRATION DATA



## CEM CALIBRATIONS

- o Calibration data for the CEMS may be found in Appendices A and B, Field Data.
- o Calibration summaries for the CEMS may be found in Appendices C and D, Calculations and Summaries.

\*\*\* 43



Date 10-19-89  
 Project CNG T106A

E-3

Meter ID R4C#3  
 Orifice ID B

| $\Delta H$ | METER Temp<br>IN | METER Temp<br>out | Ambient<br>Temp | P <sub>b</sub> | Meter<br>Volume X | Meter<br>Volume F | Meter<br>Volume | t <sub>f</sub> |
|------------|------------------|-------------------|-----------------|----------------|-------------------|-------------------|-----------------|----------------|
| 0.85       | 104              | 89                | 62              | 29.42          | 573.359           | 580.981           | 7.622           | 15             |
| 0.85       | 104              | 89                | 62              | 29.42          | 580.981           | 586.593           | 7.612           | 15             |
| 0.86       | 104              | 89                | 62              | 29.42          | 588.593           | 598.778           | 10.185          | 20<br>5a       |

16.67°C

46.5

Orifice

$$\frac{(\text{Orifice } K)(P_b)(25.4)(\Theta)}{\sqrt{\text{Ambient Temp } ^\circ\text{C} + 273}} = m^3 \text{ orifice}$$

Meter Box

$$\frac{17.64 \cdot (P_b + \frac{\Delta H}{13.6}) \cdot V_m}{460 + T_m} \div 35.31 = m^3 \text{ box}$$

$$100 - \left( \frac{m^3 \text{ orifice} - m^3 \text{ box}}{m^3 \text{ orifice}} \right) = Y$$

$$K' = 3.0632 \times 10^{-4}$$

| Box $m^3$ | Box $m^3$ |
|-----------|-----------|
| 0.202     | 0.201     |
| 0.202     | 0.201     |
| 0.270     | 0.269     |

Y = 0.995  
 Y = 0.995  
 Y = 0.996  
 Y =  
 Y =

APPENDIX F  
ENGINE OPERATIONAL DATA



|                           |                          |                     |                |
|---------------------------|--------------------------|---------------------|----------------|
| STATION 62                | ENGINE 01 OPERATION DATA |                     | ALM 3 17:53:44 |
| Engine Running and Loaded |                          | TURBINE STORAGE     |                |
| ENGINE RUNNING STATUS     |                          | PRESSURES (PSI)     |                |
| Control                   | AUTO                     | Engine Lube Oil     | 51             |
| Load Step                 | 0                        | PreOil Filter       | 59             |
| Horsepower                | 4193 BHP                 | PreOil Strainer     | 56             |
| Engine Speed:             |                          | Turbo Oil           | 18             |
| Actual                    | 329 RPM                  | Jacket Water        | 13             |
| Set Point                 | 0 %                      | Fuel Manifold       | 35             |
| Engine Torque:            |                          | MISCELLANEOUS       |                |
| Actual                    | 101 %                    | Ignition Timing     | 7              |
| Set Point                 | 100 %                    | Exhaust Oxygenation |                |
| TURBOCHARGER STATUS       |                          | Turbo Hydase        | 35 %           |
| Turbine Speed             | 12116 RPM                |                     |                |
| Air Manifold Pressure     | 36.7 "Hg                 |                     |                |
| Turbine Temp              | 1000 F                   |                     |                |
| Clear SDs                 | Eng Temp                 | FAULT               |                |
| StaYards                  | StaYards                 | StaMode             | SetPoint       |
| Eng Menu                  | NORMAL                   | 0                   | StaInflent     |

10-17-89  
 Final Run  
 A/F Ratio Locked to 0.0, 5/5

STATION 02

ENGINE 01 TEMPERATURE ( F ) DATA ALM 3 17:58:48

| CYLINDER | POWER CYLINDERS |       | FUEL VALVES |       | COMPRESSOR DISCHARGES |   | TIOGA STORAGE |                          |
|----------|-----------------|-------|-------------|-------|-----------------------|---|---------------|--------------------------|
|          | Left            | Right | Left        | Right | 1                     | 2 | Air Manifold  | Temperature Control Fans |
| 1        | 556             | 1     | 551         | 1     | 83                    | 1 | 85            | 120 120                  |
| 2        | 597             | 2     | 620         | 2     | 82                    | 2 | 81            | After Water IN 116 SP    |
| 3        | 555             | 3     | 570         | 3     | 81                    | 3 | 80            | After Water OUT 130      |
| 4        | 605             | 4     | 635         | 4     | 80                    | 4 | 78            | Difference -14           |
| 5        | 577             | 5     | 596         | 5     | 83                    | 5 | 79            | Fan #1 Control 8 100%    |
|          |                 |       |             |       |                       |   |               | Fan #2 Control 8 SP      |

## AVERAGES

| L           | 81 | R          | 80 | AVERAGE |
|-------------|----|------------|----|---------|
| L 578       |    | R 594      |    |         |
| OVERALL 586 |    | OVERALL 80 |    | 139     |

|                |     |                |     |        |  |
|----------------|-----|----------------|-----|--------|--|
| Engine Oil IN  | 143 | PreTurbine EX  | 684 | Fuel   |  |
| Engine Oil OUT | 155 | PostTurbine EX | 507 | Supply |  |
| Turbo Lube Oil | 150 | Exhaust Stack  | 44  | 65     |  |

|                  |     |      |
|------------------|-----|------|
| Jacket Water IN  | 150 |      |
| Jacket Water OUT | 150 | 160  |
| Difference       | -10 | SP   |
| Fan #1 Control   | 7   | 100% |
| Fan #2 Control   | 7   | SP   |

|                   |     |     |
|-------------------|-----|-----|
| Gas Discharge IN  | 193 |     |
| Gas Discharge OUT | 102 | 160 |
| Difference        | 93  | SP  |
| Fan #1 Control    | 50  |     |
| Fan #2 Control    | 50  |     |

!NM :#SYSE.000  
 Eng Oper Sta Disc      PRINTER @ FAULT      0      NORMAL 6  
 StaYardA StaYardB Sta Mode SetPoint Eng Menu MainMenu

STATION 02

Engine Running and Loaded

## ENGINE RUNNING STATUS

|                     |           |
|---------------------|-----------|
| Control             | AUTO      |
| Load Step           | 0         |
| Horsepower          | 4241 BHP  |
| Engine Speed:       |           |
| Actual              | 329 RPM   |
| Set Point           | 0 %       |
| Engine Torque:      |           |
| Actual              | 101 %     |
| Set Point           | 100 %     |
| TURBOCHARGER STATUS |           |
| Turbine Speed       | 12170 RPM |

Air Manifold Pressure 27.0 "Hg

ENGINE 01 OPERATION DATA  
GAS FLOW

|                        |      |
|------------------------|------|
| Suction Header         | 1    |
| Suction Press          | 547  |
| Discharge Header       | 2    |
| Discharge Press        | 1587 |
| ---Pumping Capacity--- |      |
| Minimum(MMCFD)         | 67   |
| Maximum(MMCFD)         | 112  |
| ---Fuel Usage---       |      |
| Pressure(PSI)          | 98   |
| Differ("H2O)           | 75   |
| Flowrate(MCFH)         | 32   |

ALM 3 17:29:33  
TIoga Storage

## PRESSURES (PSI)

Engine Lube Oil 51

PreOil Filter 59

PreOil Strainer 56

Turbo Oil 18

Jacket Water 13

Fuel Manifold 15

## MISCELLANEOUS

IgnitionTiming 7

Exhaust Oxygenide 1

Turbo Bypass 56 %

TIME : 11:54PM, 000

ClearSDs Eng Temp

PRINTER 0 FAULT

StandbyA StandbyB Sta Mode SetPoint

2 NORMAL 6  
Eng Menu MainMenu

10 - 17 - 89

P-5

| STATION 02     |                   | ENGINE 01 TEMPERATURE ( F ) DATA |          |                |                |                       |       | ALM 3 17:29:03                         |    |
|----------------|-------------------|----------------------------------|----------|----------------|----------------|-----------------------|-------|--|----|
| CYLINDER       | HEADS             | POWER CYLINDERS                  |          | FUEL VALVES    |                | COMPRESSOR DISCHARGES |       | TIoga Storage Temperature Control Fans |    |
|                |                   | Left                             | Right    | Left           | Right          | Left                  | Right | Air Manifold                           |    |
| 1              | 557               | 1                                | 551      | 1              | 83             | 1                     | 83    | 1                                      |    |
| 2              | 598               | 2                                | 617      | 2              | 83             | 2                     | 81    | 2                                      |    |
| 3              | 557               | 3                                | 571      | 3              | 80             | 3                     | 81    | 3                                      |    |
| 4              | 505               | 4                                | 636      | 4              | 81             | 4                     | 81    | 4                                      |    |
| 5              | 580               | 5                                | 596      | 5              | 83             | 5                     | 83    | 5                                      |    |
| AVERAGES       |                   | AVERAGES                         |          | AVERAGE        |                | Jacket Water IN       |       | Jacket Water OUT                       |    |
| L              | R                 | L                                | R        | L              | R              | Difference            |       | Difference                             |    |
| OVERALL        | OVERALL           | OVERALL                          | OVERALL  | Fan #1 Control | Fan #2 Control |                       |       | SP                                     | BP |
| Engine Oil IN  |                   | Preturbine EX                    |          | Fuel Supply    |                | Gas Discharge IN      |       | Gas Discharge OUT                      |    |
| Engine Oil OUT |                   | PostTurbine EX                   |          |                |                | Difference            |       | Difference                             |    |
| Turbo Lube Oil |                   | Exhaust Stack                    |          |                |                | Fan #1 Control        |       | SP                                     |    |
| FAN :#SYSP.000 | Eng Oper Sta Misc | PRINTER @ FAULT                  |          |                |                | Fan #2 Control        |       |  |    |
|                |                   | StaYardA                         | StaYardB | Sta Mode       |                |                       | 0     | NORMAL G                               |    |
|                |                   |                                  |          |                | SetPoint       | Eng Menu              |       | MainMenu                               |    |

STATION 02

ENGINE 01 OPERATION DATA  
GAS FLOW

Engine Running and Loaded

## ENGINE RUNNING STATUS

|                |          |
|----------------|----------|
| Control        | AUTO     |
| Load Step      | 0        |
| Horsepower     | 4267 BHP |
| Engine Speed:  |          |
| Actual         | 329 RPM  |
| Set Point      | 0 %      |
| Engine Torque: |          |
| Actual         | 101 %    |
| Set Point      | 100 %    |

## TURBOCHARGER STATUS

Turbine Speed 12229 RPM

Air Manifold Pressure 37.5 "Hg

|                            |      |
|----------------------------|------|
| Suction Header             | 1    |
| Suction Press              | 647  |
| Discharge Header           | 2    |
| Discharge Press            | 1587 |
| -----Pumping Capacity----- |      |
| Minimum(MMCFD)             | 67   |
| Maximum(MMCFD)             | 112  |
| -----Fuel Usage-----       |      |
| Pressure(PSI)              | 96   |
| Differ("H2O)               | 75   |
| Flowrate(MCFH)             | 32   |

ALM S 16:57:11

TICBA STORAGE

## PRESSURES (PSI)

|                 |    |
|-----------------|----|
| Engine Lube Oil | 51 |
| PreOil Filter   | 59 |
| PreOil Strainer | 56 |
| Turbo Oil       | 18 |
| Jacket Water    | 13 |
| Fuel Manifold   | 36 |

## MISCELLANEOUS

Ignition Timing 7

Exhaust Oxygen 10

Turbo Bypass 39 3

NN : HHSYSP.000

ClearSDs Eng Temp

|                 |          |          |          |          |        |       |
|-----------------|----------|----------|----------|----------|--------|-------|
| PRINTER @ FAULT |          |          |          |          |        |       |
| StaYardA        | StaYardB | Sta Mode | SetPoint | 0        | NORMAL | 0     |
|                 |          |          |          | Eng Memu | Ma     | ndenu |

10/17/89

STATION 82

|          |       | POWER CYLINDERS |            | ENGINE 01 TEMPERATURE ( F ) |    | COMPRESSOR DATA |         | TICGA STORAGE |  |
|----------|-------|-----------------|------------|-----------------------------|----|-----------------|---------|---------------|--|
| CYLINDER | HEADS | FUEL            | VALVES     | DISCHARGES                  |    | Temperature     | Control | Fans          |  |
| Left     | Right | Left            | Left Right |                             |    | Air Manifold    | 121     | 120           |  |
| 1        | 554   | 1               | 551        | 1                           | 83 | 1 85            | 1 190   |               |  |
| 2        | 597   | 2               | 618        | 2                           | 82 | 2 81            | 2 188   |               |  |
| 3        | 552   | 3               | 668        | 3                           | 81 | 3 79            | 3 190   |               |  |
| 4        | 604   | 4               | 635        | 4                           | 81 | 4 78            | 4 197   |               |  |
| 5        | 577   | 5               | 595        | 5                           | 83 | 5 79            |         |               |  |

## AVERAGES

|             |       |
|-------------|-------|
| L 575       | R 593 |
| OVERALL 584 |       |

|            |      |
|------------|------|
| L 82       | R 80 |
| OVERALL 81 |      |

|         |  |
|---------|--|
| AVERAGE |  |
| 188     |  |

|                  |        |
|------------------|--------|
| Jacket Water IN  | 149    |
| Jacket Water OUT | 160    |
| Difference       | -11    |
| Fan #1 Control   | 3 100% |
| Fan #2 Control   | 3 BP   |

Engine Oil IN 143  
Engine Oil OUT 156  
Turbo Tube Oil 147

PreTurbine EX 683  
PostTurbine EX 509  
Exhaust Stack 43

Fuel Supply 62

|                   |     |
|-------------------|-----|
| Gas Discharge IN  | 192 |
| Gas Discharge OUT | 99  |
| Difference        | 93  |
| Fan #1 Control    | 48  |
| Fan #2 Control    | 48  |

NM : ##SYSP.000  
Eng Oper Sta Misc

|                 |          |          |   |          |        |           |
|-----------------|----------|----------|---|----------|--------|-----------|
| PRINTER @ FAULT | 0        | SetPoint | 0 | Eng Menu | NORMAL | G         |
| StaYardA        | StaYardB | Sta Mode |   | SetPoint |        | Maingroup |

| STATION 02                     |           | ENGINE 01 OPERATION DATA |          | ALM 3 15:15:26  |           |
|--------------------------------|-----------|--------------------------|----------|-----------------|-----------|
| Engine Running and Loaded      |           | GAS FLOW                 |          | TODAY'S STORAGE |           |
| ENGINE RUNNING STATUS          |           | Suction Header 1         |          | PRESSURES (PSI) |           |
| Control                        | AUTO      | Suction Press            | 645      | Engine Lube Oil | 51        |
| Load Step                      | 0         | Dechrge Header           | 2        | Prefil Filter   | 59        |
| Horsepower                     | 4226 BHP  | Dechrge Press            | 1586     | Prefil Strainer | 56        |
| Engine Speed:                  |           | ----Pumping Capacity---- |          | Turbo Oil       | 18        |
| Actual                         | 329 RPM   | Minimum(MMCFD)           | 67       | Jacket Water    | 13        |
| Set Point                      | 0 %       | Maximum(MMCFD)           | 112      | Fuel Manifold   | 35        |
| Engine Torque:                 |           | ----Fuel Usage----       |          | MISCELLANEOUS   |           |
| Actual                         | 101 %     | Pressure(PSI)            | 96       | Ignition Timing | "         |
| Set Point                      | 100 %     | Differ(H2O)              | 74       |                 |           |
| TURBOCHARGER STATUS            |           | Flowrate(MCFH)           | 32       |                 |           |
| Turbine Speed                  | 12159 RPM |                          |          |                 |           |
| Air Manifold Pressure 36.9 "Hg |           |                          |          |                 |           |
| IOPC : INSTRAIR.PRES.          |           |                          |          |                 |           |
| 1earSDs                        | Eng Temp  | StaYardA                 | StaYardB | Sta Mode        | SetPoint  |
|                                |           |                          |          |                 | 110.04297 |
|                                |           |                          |          |                 | Eng Henu  |
|                                |           |                          |          |                 | Mainmenu  |

10-12-89

| STATION 02         |       |                    |            |            |    |                   |    |                   |         | ALM 3 15:16:02  |      |      |
|--------------------|-------|--------------------|------------|------------|----|-------------------|----|-------------------|---------|-----------------|------|------|
|                    |       | POWER CYLINDERS    |            | ENGINE 01  |    | TEMPERATURE ( F ) |    | DATA              |         | TIOGA STORAGE   |      |      |
| CYLINDER           | HEADS | FUEL               | VALVES     | COMPRESSOR |    | DISCHARGES        |    | Temperature       | Control | Fans            |      |      |
| Left               | Right | Left               | Left Right |            |    |                   |    |                   |         |                 |      |      |
| 1                  | 557   | 1                  | 551        | 1          | 82 | 1                 | 83 | 1                 | 189     | Air Manifold    | 120  | 120  |
| 2                  | 598   | 2                  | 622        | 2          | 82 | 2                 | 62 | 2                 | 187     | After Water IN  | 117  | SP   |
| 3                  | 556   | 3                  | 571        | 3          | 81 | 3                 | 78 | 3                 | 189     | After Water OUT | 131  |      |
| 4                  | 606   | 4                  | 638        | 4          | 80 | 4                 | 77 | 4                 | 188     | Difference      | -14  |      |
| 5                  | 578   | 5                  | 598        | 5          | 82 | 5                 | 78 |                   |         | Fan #1 Control  | 9    | 100% |
|                    |       |                    |            |            |    |                   |    |                   |         | Fan #2 Control  | 9    | SP   |
| AVERAGES           |       | AVERAGES           |            | AVERAGE    |    | Jacket Water IN   |    | 149               |         |                 |      |      |
| L 579              | R 596 | L 81               | R 79       |            |    |                   |    | Jacket Water OUT  |         | 160             | 160  |      |
| OVERALL 587        |       | OVERALL 80         |            |            |    |                   |    | Difference        |         | -11             | SP   |      |
| Engine Oil IN 141  |       | PreTurbine EX 687  |            | Fuel       |    |                   |    | Fan #1 Control    |         | 3               | 100% |      |
| Engine Oil OUT 156 |       | PostTurbine EX 510 |            | Supply     |    |                   |    | Fan #2 Control    |         | 3               | SP   |      |
| Turbo Lube Oil 153 |       | Exhaust Stack 42   |            |            |    |                   |    |                   |         |                 |      |      |
|                    |       |                    |            |            |    |                   |    | Gas Discharge IN  |         | 192             |      |      |
|                    |       |                    |            |            |    |                   |    | Gas Discharge OUT |         | 100             | 100  |      |
|                    |       |                    |            |            |    |                   |    | Difference        |         | 92              | SP   |      |
|                    |       |                    |            |            |    |                   |    | Fan #1 Control    |         | 51              |      |      |
|                    |       |                    |            |            |    |                   |    | Fan #2 Control    |         | 51              |      |      |

'DC :INSTRAIR.PRES.  
 Eng Oper Sta Misc StaYardA StaYardB Sta Mode 110.04297 SetPoint Eng Menu HIALRM 6  
 MainMenu

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STATION 02

ENGINE 01 OPERATION DATA  
GAS FLOW

### Engine Running and Loaded

#### ENGINE RUNNING STAGES

|                     |           |
|---------------------|-----------|
| Control             | AUTO      |
| Load Step           | 0         |
| Horsepower          | 4198 BHP  |
| Engine Speed:       |           |
| Actual              | 328 RPM   |
| Set Point           | 0 %       |
| Engine Torque:      |           |
| Actual              | 101 %     |
| Set Point           | 100 %     |
| TURBOCHARGER STATUS |           |
| Turbine Speed       | 12154 RPM |

Air Manifold Pressure 36.9 "Hg

DC : INSTRUMENTS

110.04297 ALARM 6

10-17-89

| STATION 02         |                    | ENGINE 01 TEMPERATURE ( F ) DATA |        |            |       |                          |                  | ALM 3 15:16:18 |      |
|--------------------|--------------------|----------------------------------|--------|------------|-------|--------------------------|------------------|----------------|------|
|                    |                    | POWER CYLINDERS                  |        | COMPRESSOR |       | Temperature Control Fans |                  | 110GA STORAGE  |      |
| CYLINDER           | HEADS              | FUEL                             | VALVES | DISCHARGES |       | Air Manifold             | IN               | 121            | 120  |
| Left               | Right              | Left                             | Right  | Left       | Right | After Water              | IN               | 115            | SP   |
| 1                  | 556                | 1                                | 550    | 1          | 82    | 1                        | 85               | 1              | 120  |
| 2                  | 598                | 2                                | 620    | 2          | 83    | 2                        | 83               | 2              | 131  |
| 3                  | 556                | 3                                | 573    | 3          | 82    | 3                        | 78               | 3              | 136  |
| 4                  | 605                | 4                                | 639    | 4          | 79    | 4                        | 77               | 4              | 100% |
| 5                  | 577                | 5                                | 598    | 5          | 81    | 5                        | 78               | 5              | SP   |
| <b>AVERAGES</b>    |                    |                                  |        |            |       |                          |                  |                |      |
| L 578              | R 596              | L 81                             | R 80   | L 81       | R 80  | AVERAGE                  | Jacket Water IN  | 149            |      |
| OVERALL 587        |                    | OVERALL 80                       |        | OVERALL 80 |       | 189                      | Jacket Water OUT | 159            | 160  |
| Engine Oil IN 143  | PreTurbine EX 687  | Fuel                             |        |            |       | Difference               | -10              | SP             |      |
| Engine Oil OUT 155 | PostTurbine EX 509 | Supply                           |        |            |       | Fan #1 Control           | 7                | 100%           |      |
| Turbo Lube Oil 152 | Exhaust Stack 41   |                                  |        |            |       | Fan #2 Control           | 7                | SP             |      |
|                    |                    |                                  |        |            |       | Gas Discharge IN         | 192              |                |      |
|                    |                    |                                  |        |            |       | Gas Discharge OUT        | 190              | 190            |      |
|                    |                    |                                  |        |            |       | Difference               | 92               |                |      |
|                    |                    |                                  |        |            |       | Fan #1 Control           | 51               |                |      |
|                    |                    |                                  |        |            |       | Fan #2 Control           | 51               |                |      |

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Eng Open Sta Misc StaYardA StaYardB Sta Node 110.04297 SetPoint Eng Menu HIALEM 6 MainMenu

STATION 02

Engine Running and Loaded

## ENGINE RUNNING STATUS

|                     |           |
|---------------------|-----------|
| Control             | AUTO      |
| Load Step           | 0         |
| Horsepower          | 4217 BHP  |
| Engine Speed:       |           |
| Actual              | 328 RPM   |
| Set Point           | 0 %       |
| Engine Torque:      |           |
| Actual              | 99 %      |
| Set Point           | 100 %     |
| TURBOCHARGER STATUS |           |
| Turbine Speed       | 12180 RPM |

ENGINE 01 OPERATION DATA  
GAS FLOW

|                          |      |
|--------------------------|------|
| Suction Header           | 1    |
| Suction Press            | 647  |
| Deschrge Header          | 2    |
| Deschrge Press           | 1586 |
| ----Pumping Capacity---- |      |
| Minimum(MMCFD)           | 57   |
| Maximum(MMCFD)           | 112  |
| ----Fuel Usage----       |      |
| Pressure(PSI)            | 96   |
| Differ("H2O)             | 74   |
| Flowrate(MCFH)           | 32   |

Air Manifold Pressure 37.1 "Hg

ALM 3 14:45:45

TIOGA STORAGE

## PRESSURES (PSI)

Engine Lube Oil 51

PreOil Filter 59

PreOil Strainer 56

Turbo Oil 48

Jacket Water 13

Fuel Manifold 35

## MISCELLANEOUS

IgnitionTiming 7

Exhaust Oxygen 14.5 %

Turbo Bypass 51 %

110.04297

HIALRM 6

MainMenu

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ClearSDs Eng Temp StaYardA StaYardB Sta Mode

SetPoint

Eng Menu

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STATION 02

| CYLINDER<br>Left | POWER<br>HEADS<br>Right | ENGINE C1    |                | TEMPERATURE ( F )        |              | DATA            | ALM 3 14:47:09 |               |
|------------------|-------------------------|--------------|----------------|--------------------------|--------------|-----------------|----------------|---------------|
|                  |                         | FUEL<br>Left | VALVES<br>Left | COMPRESSOR<br>DISCHARGES | AIR<br>Right |                 | Temperature    | TIOGA STORAGE |
| 1 555            | 1 552                   | 1 81         | 1 83           | 1 187                    | 1 187        | Air Manifold    | 121            | 120           |
| 2 597            | 2 620                   | 2 83         | 2 80           | 2 189                    | 2 189        | After Water IN  | 115            | SP            |
| 3 556            | 3 570                   | 3 80         | 3 80           | 3 189                    | 3 189        | After Water OUT | 130            |               |
| 4 604            | 4 638                   | 4 81         | 4 77           | 4 188                    | 4 188        | Difference      | -15            |               |
| 5 578            | 5 596                   | 5 82         | 5 77           |                          |              | Fan #1 Control  | 10             | 100%          |

AVERAGES

L 578 R 595  
OVERALL 586AVERAGES  
L 81 R 79  
OVERALL 80AVERAGE  
188

|                  |        |
|------------------|--------|
| Jacket Water IN  | 151    |
| Jacket Water OUT | 160    |
| Difference       | -9     |
| Fan #1 Control   | 8 100% |
| Fan #2 Control   | 8 BP   |

Engine Oil IN 141  
Engine Oil OUT 155  
Turbo Lube Oil 151PreTurbine EX 687  
PostTurbine EX 609  
Exhaust Stack 44

Fuel Supply 65

|                 |     |
|-----------------|-----|
| Gas Dischrg IN  | 191 |
| Gas Dischrg OUT | 180 |
| Difference      | 91  |
| Fan #1 Control  | 52  |
| Fan #2 Control  | 52  |

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Eng Oper Sta Misc StaYardA StaYardB Sta Node 110.04297 SetPoint Eng Menu HALRTG MainMenu

STATION 02

ENGINE 01 OPERATION DATA  
GAS FLOW

Engine Running and Loaded

## ENGINE RUNNING STATUS

|                     |           |
|---------------------|-----------|
| Control             | AUTO      |
| Load Step           | 2         |
| Horsepower          | 4262 BHP  |
| Engine Speed:       |           |
| Actual              | 330 RPM   |
| Set Point           | 0 %       |
| Engine Torque:      |           |
| Actual              | 101 %     |
| Set Point           | 100 %     |
| TURBOCHARGER STATUS |           |
| Turbine Speed       | 12164 RPM |

Air Manifold Pressure 37.0 "Hg

|                          |      |
|--------------------------|------|
| Suction Header           | 1    |
| Suction Press            | 647  |
| Discharge Header         | 2    |
| Discharge Press          | 1587 |
| ----Pumping Capacity---- |      |
| Minimum(MMCFD)           | 68   |
| Maximum(MMCFD)           | 112  |
| ----Fuel Usage----       |      |
| Pressure(PSI)            | 96   |
| Differ("H2O)             | 75   |
| Flowrate(MCFH)           | 32   |

ALM 3 14:46:32  
TIDG4 STORAGE  
PRESSURES (PSI)

|                  |    |
|------------------|----|
| Engine Lube Oil  | 51 |
| PrecOil Filter   | 59 |
| PrecOil Strainer | 56 |
| Turbo Oil        | 18 |
| Jacket Water     | 15 |
| Fuel Manifold    | 35 |

MISCELLANEOUS  
JunctionTiming

Exhaust oxygen detector

Turbo Bypass

110.04297      HI ALRM 16  
SetPoint      Eng menu      Mainmenu

10-17-89

STATION 02

ENGINE 01 TEMPERATURE ( F ) DATA ALM 3 14:47:28

| CYLINDER | HEADS | POWER CYLINDERS |       | FUEL VALVES |       | COMPRESSOR DISCHARGES |    | Temperature | TIOGA STORAGE |                       |
|----------|-------|-----------------|-------|-------------|-------|-----------------------|----|-------------|---------------|-----------------------|
|          |       | Left            | Right | Left        | Right | 1                     | 2  |             | Air Manifold  | Control Fans          |
| 1        | 554   | 1               | 551   | 1           | 82    | 1                     | 85 | 1           | 189           | 150 120               |
| 2        | 598   | 2               | 521   | 2           | 81    | 2                     | 80 | 2           | 189           | After Water IN 115 SP |
| 3        | 552   | 3               | 569   | 3           | 79    | 3                     | 78 | 3           | 188           | After Water OUT 130   |
| 4        | 605   | 4               | 639   | 4           | 79    | 4                     | 77 | 4           | 188           | Difference -14        |
| 5        | 577   | 5               | 597   | 5           | 82    | 5                     | 79 |             |               | Fan #1 Control 9 100% |
|          |       |                 |       |             |       |                       |    |             |               | Fan #2 Control 9 SP   |

## AVERAGES

L 577 R 595  
OVERALL 586

## AVERAGES

L 80 R 79  
OVERALL 79

AVERAGE

188

|                  |         |
|------------------|---------|
| Jacket Water IN  | 151     |
| Jacket Water OUT | 160 160 |
| Difference       | -9 SP   |
| Fan #1 Control   | 9 100%  |
| Fan #2 Control   | 9 SP    |

Engine Oil IN 143

Engine Oil OUT 155

Turbo Lube Oil 154

PreTurbine EX 697

PostTurbine EX 509

Exhaust Stack 42

Fuel Supply

65

|                   |         |
|-------------------|---------|
| Gas Discharge IN  | 191     |
| Gas Discharge OUT | 100 100 |
| Difference        | -91 SP  |
| Fan #1 Control    | 52      |
| Fan #2 Control    | 50      |

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Eng Oper Sta Misc StaYardA StaYardB Sta Mode

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## STATION 02

## ENGINE 01 OPERATION DATA

Engine Running and Loaded

## ENGINE RUNNING STATUS

Control

Load Step

Horsepower

Engine Speed:

Actual

Set Point

Engine Torque:

Actual

Set Point

## TURBOCHARGER STATUS

Turbine Speed 12197 RPM

Air Manifold Pressure 37.5 "Hg

## GAS FLOW

|                          |      |
|--------------------------|------|
| Suction Header           | 1    |
| Suction Press            | 646  |
| Discharge Header         | 2    |
| Discharge Press          | 1588 |
| ----Pumping Capacity---- |      |
| Minimum(MMCFD)           | 66   |
| Maximum(MMCFD)           | 113  |
| -----Fuel Usage-----     |      |
| Pressure(PSI)            | 96   |
| Differ("H2O)             | 74   |
| Flowrate(MCFH)           | 32   |

ALM 3 14:15:02

TIoga Storage

Pressures (PSI)

Engine Lube Oil 51

PreOil Filter 59

PreOil Strainer 56

Turbo Oil 18

Jacket Water 13

Fuel Manifold 35

## MISCELLANEOUS

Ignition Timing /

Exhaust Oxygen &lt;&lt; 8

Turbo Bypass 32 %

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ClearSDs Eng Temp StaYardA

StaYardB StaYardB

Sta Mode SetPoint

110.04297

HIAWM G

Eng Menu

MainMenu

10-17-89

| STATION 02      |       | ENGINE 01      |       | TEMPERATURE ( F )     |       | DATA |    | ALM 3 14:14:34    |              |
|-----------------|-------|----------------|-------|-----------------------|-------|------|----|-------------------|--------------|
| POWER CYLINDERS |       | FUEL VALVES    |       | COMPRESSOR DISCHARGES |       |      |    | TIOGA STORAGE     |              |
| CYLINDER        | HEADS | Left           | Right | Left                  | Right |      |    | Temperature       | Control Fans |
| 1               | 555   | 1              | 550   | 1                     | 83    | 1    | 83 | 1                 | 186          |
| 2               | 598   | 2              | 618   | 2                     | 82    | 2    | 80 | 2                 | 189          |
| 3               | 557   | 3              | 572   | 3                     | 79    | 3    | 78 | 3                 | 186          |
| 4               | 605   | 4              | 639   | 4                     | 80    | 4    | 79 | 4                 | 186          |
| 5               | 580   | 5              | 598   | 5                     | 82    | 5    | 78 |                   |              |
| AVERAGES        |       | AVERAGES       |       | AVERAGE               |       |      |    |                   |              |
| L 579           | R 595 | L 81           | R 79  |                       | 186   |      |    | Jacket Water IN   | 149          |
| OVERALL 587     |       | OVERALL 80     |       |                       |       |      |    | Jacket Water OUT  | 160          |
| Engine Oil IN   | 141   | PreTurbine EX  | 686   | Fuel                  |       |      |    | Difference        | 11           |
| Engine Oil OUT  | 156   | PostTurbine EX | 509   | Supply                |       |      |    | Fan #1 Control    | 8            |
| Turbo Lube Oil  | 153   | Exhaust Stack  | 42    | 45                    |       |      |    | Fan #2 Control    | 8            |
|                 |       |                |       |                       |       |      |    | Gas Discharge IN  | 191          |
|                 |       |                |       |                       |       |      |    | Gas Discharge OUT | 100          |
|                 |       |                |       |                       |       |      |    | Difference        | 91           |
|                 |       |                |       |                       |       |      |    | Fan #1 Control    | 52           |
|                 |       |                |       |                       |       |      |    | Fan #2 Control    | 52           |

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 Eng Oper Sta Misc StaYardA StaYardB Sta Mode 110.04297 SetPoint Eng Menu HALEM 6  
 Mainmenu

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## STATION 02

Engine Running and Loaded

## ENGINE RUNNING STATUS

|                |          |
|----------------|----------|
| Control        | AUTO     |
| Load Step      | 0        |
| Horsepower     | 4255 BHP |
| Engine Speed:  |          |
| Actual         | 329 RPM  |
| Set Point      | 0 %      |
| Engine Torque: |          |
| Actual         | 101 %    |
| Set Point      | 100 %    |

## TURBOCHARGER STATUS

Turbine Speed 12197 RPM

Air Manifold Pressure 37.3 psig

ENGINE 01 OPERATION DATA  
GAS FLOW

|                            |      |
|----------------------------|------|
| Suction Header             | 1    |
| Suction Press              | 546  |
| Dischrge Header            | 2    |
| Dischrge Press             | 1588 |
| -----Pumping Capacity----- |      |
| Minimum (NMCFD)            | 58   |
| Maximum (MMCFD)            | 113  |
| -----Fuel Usage-----       |      |
| Pressure (PSI)             | 96   |
| Differ ("H2O)              | 74   |
| Flowrate (MOPH)            | 32   |

GLM 3 14:15:15

T105A STORAGE

PRESSURES (PSI)

Engine Lube Oil St

PreOil Filter 59

PreOil Strainer 56

Turbo Oil 18

Jacket Water 15

Fuel Manifold 35

## MISCELLANEOUS

FunctionTiming

Exhaust Oxygenation

Turbo Bypass 32 %

110.04297

ALARM 6

'00 : INSTRAIR PRES.

LearSDs Eng Temp StaYards StaYardB Sta Mode SetPoint Eng Menu Flashmenu

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STATION 02

|          |       | ENGINE 01 TEMPERATURE ( F ) |        |            |            |   |              | ALM 3 14:14:41 |      |
|----------|-------|-----------------------------|--------|------------|------------|---|--------------|----------------|------|
|          |       | POWER CYLINDERS             |        |            | COMPRESSOR |   |              | TIOGA STORAGE  |      |
| CYLINDER | HEADS | FUEL                        | VALVES | DISCHARGES |            |   | Temperature  | Control        | Fans |
| Left     | Right | Left                        | Right  |            |            |   | Air Manifold | 120            | 120  |
| 1        | 555   | 1                           | 550    | 1          | 83         | 1 | 83           | 115            | SP   |
| 2        | 598   | 2                           | 518    | 2          | 82         | 2 | 80           | 131            |      |
| 3        | 557   | 3                           | 572    | 3          | 79         | 3 | 78           | -18            |      |
| 4        | 605   | 4                           | 639    | 4          | 80         | 4 | 79           | 11             | 100% |
| 5        | 580   | 5                           | 598    | 5          | 82         | 5 | 78           | 11             | BP   |

## AVERAGES

L 579 R 595

OVERALL 587

## AVERAGES

L 81 R 79

OVERALL 80

## AVERAGE

186

|                |     |      |
|----------------|-----|------|
| Jacket Water   | IN  | 149  |
| Jacket Water   | OUT | 160  |
| Difference     |     | -11  |
| Fan #1 Control | SP  | 100% |
| Fan #2 Control | SP  | BP   |

Engine Oil IN 141

PreTurbine EX 696

Gas Discharge IN 191

Engine Oil OUT 156

PostTurbine EX 509

Gas Discharge OUT 100

Turbo Lube Oil 153

Exhaust Stack 42

Difference 91 SP

Fuel Supply

Fan #1 Control 52

65

Fan #2 Control 52

'DC : INSTRATR.PRES.

Eng Oper Sta Misc StaYardsA StaYardsB Sta Mode

110.04297 SetPoint Eng Menu ALRM 6 MainMenu

STATION 02

ENGINE 01 OPERATION DATA  
GAS FLOW

|                       |           |
|-----------------------|-----------|
| ENGINE RUNNING STATUS |           |
| Control               | AUTO      |
| Load Step             | 0         |
| Horsepower            | 4267 SHp  |
| Engine Speed:         |           |
| Actual                | 329 RPM   |
| Set Point             | 0 %       |
| Engine Torque:        |           |
| Actual                | 101 %     |
| Set Point             | 100 %     |
| TURBOCHARGER STATUS   |           |
| Turbine Speed         | 12197 RPM |

Air Manifold Pressure 37.2 "Hg

|                      |  |
|----------------------|--|
| ALN 3 13:45:51       |  |
| TIDGA STORAGE        |  |
| PRESSURES (PSI)      |  |
| Engine Lube Oil 51   |  |
| PreOil Filter 59     |  |
| PreOil Strainer 55   |  |
| Turbo Oil 18         |  |
| Jacket Water 13      |  |
| Fuel Manifold 35     |  |
| MISCELLANEOUS        |  |
| Ignition timing 7    |  |
| Exhaust Oxygen << 12 |  |
| Turbo Bypass 31 %    |  |

DC : INSTRAIR.PRES.

ClearSDs Eng Temp StandardA StandardB Sta Mode SetPoint Eng Menu LocalRun G MacdMenu

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STATION 62

|          | POWER CYLINDERS |      | ENGINE 01 |      | TEMPERATURE ( F ) |                       | DATA            |
|----------|-----------------|------|-----------|------|-------------------|-----------------------|-----------------|
| CYLINDER | HEADS           | FUEL | VALVES    | Left | Right             | COMPRESSOR DISCHARGES |                 |
| 1        | 555             | 1    | 554       | 1    | 81                | 1                     | Air Manifold    |
| 2        | 598             | 2    | 618       | 2    | 81                | 2                     | After Water IN  |
| 3        | 554             | 3    | 572       | 3    | 79                | 3                     | After Water OUT |
| 4        | 604             | 4    | 636       | 4    | 81                | 4                     | Difference      |
| 5        | 578             | 5    | 597       | 5    | 82                | 5                     | Fan #1 Control  |
|          |                 |      |           |      |                   |                       | Fan #2 Control  |

## AVERAGES

L 577 R 595  
OVERALL 586

## AVERAGES

L 80 R 79  
OVERALL 79

## AVERAGE

187

Engine Oil IN 141

Engine Oil OUT 156

Turbo Lube Oil 150

Prefurbine EX 586

PostTurbine EX 510

Exhaust Stack 42

Fuel

Supply

63

ALM 3 LS:47:46

TIOGA STORAGE

| Temperature     | Control | Fans |
|-----------------|---------|------|
| Air Manifold    | 120     | 120  |
| After Water IN  | 115     | SP   |
| After Water OUT | 130     |      |
| Difference      | -15     |      |
| Fan #1 Control  | 19      | 100% |
| Fan #2 Control  | 10      | BP   |

|                  |     |      |
|------------------|-----|------|
| Jacket Water IN  | 149 |      |
| Jacket Water OUT | 159 | 160  |
| Difference       | -7  | SP   |
| Fan #1 Control   | 7   | 100% |
| Fan #2 Control   | 7   | BP   |

|                   |     |     |
|-------------------|-----|-----|
| Gas Dischrgue IN  | 191 |     |
| Gas Dischrgue OUT | 100 | 100 |
| Difference        | 91  | SP  |
| Fan #1 Control    | 52  |     |
| Fan #2 Control    | 52  |     |

89.957031 LOALRM 16  
SetPoint Eng Menu Maintenu

DC : INSTRAIR.PRES.

Eng Oper Sta Misc StaYardA StaYardB Sta Mode

STATION 02

ENGINE 01 OPERATION DATA  
GAS FLOW

Engine Running and Loaded

|                       |           |
|-----------------------|-----------|
| ENGINE RUNNING STATUS |           |
| Control               | AUTO      |
| Load Step             | 0         |
| Horsepower            | 4256 BHP  |
| Engine Speed:         |           |
| Actual                | 329 RPM   |
| Set Point             | 0 %       |
| Engine Torque:        |           |
| Actual                | 102 %     |
| Set Point             | 100 %     |
| TURBOCHARGER STATUS   |           |
| Turbine Speed         | 12207 RPM |

Air Manifold Pressure 37.3 "Hg

|                          |      |
|--------------------------|------|
| Suction Header           | 4    |
| Suction Press            | 649  |
| Dechrgre Header          | 2    |
| Dechrgre Press           | 1887 |
| ----Pumping Capacity---- |      |
| Minimum(MMCFD)           | 68   |
| Maximum(MMCFD)           | 113  |
| -----Fuel Usage-----     |      |
| Pressure(PSI)            | 96   |
| Differ("H2O)             | 75   |
| Flowrate(MCFH)           | 32   |

|                                  |      |
|----------------------------------|------|
| ALM 3 13:46:11                   |      |
| TIoga Storage                    |      |
| PRESSURES (PSI)                  |      |
| Engine Lube Oil                  | 21   |
| PreOil Filter                    | 59   |
| PreOil Strainer                  | 56   |
| Turbo Oil                        | 18   |
| Jacket Water                     | 13   |
| Fuel Manifold                    | 36   |
| MISCELLANEOUS                    |      |
| Ignition Timing                  | 7    |
| Exhaust Oxygen(%O <sub>2</sub> ) | X    |
| Turbo Bypass                     | 31 % |

DC : INSTRAIR.PRES.

|          |          |          |          |          |          |           |          |
|----------|----------|----------|----------|----------|----------|-----------|----------|
| ClearSDs | Eng Temp | StaYardA | StaYardB | Sta Node | SetPoint | 69.957031 | L3ALRM C |
|          |          |          |          |          |          | Eng Menu  | MainMenu |

10-17-89

STATION 02

|          | POWER CYLINDERS |      | ENGINE 01 TEMPERATURE ( F ) |      | COMPRESSOR DISCHARGES |   |
|----------|-----------------|------|-----------------------------|------|-----------------------|---|
| CYLINDER | HEADS           | FUEL | VALVES                      | Left | Right                 |   |
| Left     | Right           | Left | Right                       | 1    | 83                    | 1 |
| 1        | 556             | 1    | 551                         | 1    | 81                    | 1 |
| 2        | 597             | 2    | 522                         | 2    | 81                    | 2 |
| 3        | 556             | 3    | 573                         | 3    | 79                    | 3 |
| 4        | 604             | 4    | 639                         | 4    | 79                    | 4 |
| 5        | 581             | 5    | 598                         | 5    | 82                    | 5 |
|          |                 |      |                             |      | 78                    |   |

## AVERAGES

|             |       |
|-------------|-------|
| L 579       | R 596 |
| OVERALL 587 |       |

## AVERAGES

|            |      |
|------------|------|
| L 80       | R 78 |
| OVERALL 79 |      |

## AVERAGE

186

ALM 3 13:48:03

TIOGA STORAGE

| Temperature       | Control | Fans |
|-------------------|---------|------|
| Air Manifold      | 120     | 120  |
| After Water IN    | 117     | SP   |
| After Water OUT   | 130     |      |
| Difference        | -13     |      |
| Fan #1 Control    | 9       | 100% |
| Fan #2 Control    | 9       | BP   |
| Jacket Water IN   | 152     |      |
| Jacket Water OUT  | 159     | 150  |
| Difference        | -7      | SP   |
| Fan #1 Control    | 7       | 100% |
| Fan #2 Control    | 7       | BP   |
| Gas Discharge IN  | 191     |      |
| Gas Discharge OUT | 100     | 100  |
| Difference        | 91      | SP   |
| Fan #1 Control    | 52      |      |
| Fan #2 Control    | 52      |      |

Engine Oil IN 141

Engine Oil OUT 155

Turbo Lubrication Oil 152

FreTurbine EX 687

PostTurbine EX 509

Exhaust Stack 42

Fuel Supply

63

Gas Discharge IN 191

Gas Discharge OUT 100

Difference 91 SP

Fan #1 Control 52

Fan #2 Control 52

DC : INSTRAIR.PRES.

|          |          |          |          |          |          |          |          |
|----------|----------|----------|----------|----------|----------|----------|----------|
| Eng Open | Sta Misc | StaYardA | StaYardB | Sta Mode | SetPoint | Eng Menu | MainMenu |
|----------|----------|----------|----------|----------|----------|----------|----------|

Engine Running and Loaded

## ENGINE RUNNING STATUS

|                     |           |
|---------------------|-----------|
| Control             | AUTO      |
| Load Step           | 0         |
| Horsepower          | 4266 BHP  |
| Engine Speed:       |           |
| Actual              | 329 RPM   |
| Set Point           | 0 %       |
| Engine Torque:      |           |
| Actual              | 101 %     |
| Set Point           | 100 %     |
| TURBOCHARGER STATUS |           |
| Turbine Speed       | 12191 RPM |

Air Manifold Pressure 37.1 "Hg

## GAS FLOW

|                            |      |
|----------------------------|------|
| Suction Header             | 1    |
| Suction Press              | 650  |
| Discharge Header           | 2    |
| Discharge Press            | 1587 |
| -----Pumping Capacity----- |      |
| Minimum(MMCFD)             | 67   |
| Maximum(MMCFD)             | 142  |
| -----Fuel Usage-----       |      |
| Pressure(PSI)              | 96   |
| Differ("H2O)               | 75   |
| Flowrate(MCFH)             | 32   |

## PRESSURES (PSI)

|                 |    |    |
|-----------------|----|----|
| Engine Lube Oil | 51 | Se |
| PreOil Filter   | 59 | /  |
| PreOil Strainer | 56 |    |
| Turbo Oil       | 18 |    |
| Jacket Water    | 13 |    |
| Fuel Manifold   | 36 |    |

## MISCELLANEOUS

IgnitionTiming

Exhaust OxygenLevel

Turbo Bypass

A1 :REGEN HEATER ALRM

|         |          |          |          |          |          |       |        |          |          |
|---------|----------|----------|----------|----------|----------|-------|--------|----------|----------|
| ClearBd | Eng Temp | StaYardA | StaYardB | Sta Node | SetPoint | 0 OFF | NORMAL | Eng menu | BaudRate |
|---------|----------|----------|----------|----------|----------|-------|--------|----------|----------|

| POWER CYLINDERS                              |       | FUEL           |      | VALVES  |       | COMPRESSOR |            | Temperature      |          | Control Fans   |      |
|--|-------|----------------|------|---------|-------|------------|------------|------------------|----------|----------------|------|
| CYLINDER                                     | HEADS |                |      | Left    | Right |            | DISCHARGES |                  |          |                |      |
| 1  | 558   | 1              | 554  | 1       | 62    | 1          | 83         | 1                | 189      | 120            | 120  |
| 2  | 599   | 2              | 622  | 2       | 81    | 2          | 80         | 2                | 186      | 115            | SP   |
| 3  | 560   | 3              | 573  | 3       | 80    | 3          | 81         | 3                | 186      | 130            |      |
| 4  | 527   | 4              | 640  | 4       | 79    | 4          | 77         | 4                | 186      | -15            |      |
| 5  | 578   | 5              | 600  | 5       | 85    | 5          | 78         |                  |          | Fan #1 Control | 100% |
|  |       |                |      |         |       |            |            |                  |          | Fan #2 Control | BP   |
| AVERAGES                                     |       | AVERAGES       |      | AVERAGE |       | AVERAGE    |            | Jacket Water IN  |          | 150            |      |
| L 580  | R 597 | L 81           | R 79 |         |       |            | 186        | Jacket Water OUT | 159      | 160            |      |
| OVERALL 588                                  |       | OVERALL 80     |      |         |       |            |            | Difference       | -9       | SP             |      |
| Engine Oil IN                                | 141   | Prefurbane EX  | 690  | Fuel    |       |            |            | Fan #1 Control   | 3        | 100%           |      |
| Engine Oil OUT                               | 156   | PostTurbine EX | 509  | Supply  |       |            |            | Fan #2 Control   | 3        | BP             |      |
| Turbo Lube Oil                               | 147   | Exhaust Stack  | 45   |         | 62    |            |            |                  |          |                |      |
|  |       |                |      |         |       |            |            |                  |          |                |      |
| 01 :REGEN,HEATER,ALRM                        |       |                |      |         |       |            |            |                  |          |                |      |
| ing Open Sta Misc StaYardA StaYardB Sta Node |       |                |      |         |       |            |            | 0 OFF            |          | NORMAL C       |      |
|  |       |                |      |         |       |            |            | SetPoint         | Eng Menu | MainMenu       |      |

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## F-26

Engine Running and Loaded

## ENGINE RUNNING STATUS

|                     |           |
|---------------------|-----------|
| Control             | AUTO      |
| Load Step           | 0         |
| Horsepower          | 4257 Bhp  |
| Engine Speed:       |           |
| Actual              | 329 RPM   |
| Set Point           | 0 %       |
| Engine Torque:      |           |
| Actual              | 101 %     |
| Set Point           | 100 %     |
| TURBOCHARGER STATUS |           |
| Turbine Speed       | 12191 RPM |

Air Manifold Pressure 27.0 "Hg

## GAS FLOW

|                          |      |
|--------------------------|------|
| Suction Header           | 1    |
| Suction Press            | 651  |
| Discharge Header         | 2    |
| Discharge Press          | 1587 |
| ----Pumping Capacity---- |      |
| Minimum(MMCFD)           | 68   |
| Maximum(MMCFD)           | 113  |
| ----Fuel Usage----       |      |
| Pressure(PSI)            | 96   |
| Differ("H2O)             | 75   |
| Flowrate(MCFH)           | 33   |

## PRESSURES (PSI)

|                 |    |   |
|-----------------|----|---|
| Engine Lube Oil | 51 | See   |
| PreOil Filter   | 59 |  |
| PreOil Strainer | 56 |   |
| Turbo Oil       | 18 |   |
| Jacket Water    | 13 |   |
| Fuel Manifold   | 36 |   |

## MISCELLANEOUS

Ignition Timing

Exhaust Oxygen

Turbo Bypass

|          |          |   |
|----------|----------|---|
| 9 OFF    | 1 NORMAL | 0 |
| Eng Menu | Maintain |   |

101 \*REGEN,HEATER,ALRM

|          |          |          |          |          |          |  |  |
|----------|----------|----------|----------|----------|----------|--|--|
| learSide | Eng Temp | StaYardA | StaYardB | Sta Mode | SetPoint |  |  |
|----------|----------|----------|----------|----------|----------|--|--|

F-27

| POWER CYLINDERS  |                | FUEL         |               | VALVES        |                | COMPRESSOR     |                | Temperature |     | Control Fans |          |
|------------------|----------------|--------------|---------------|---------------|----------------|----------------|----------------|-------------|-----|--------------|----------|
| CYLINDER<br>Left | HEADS<br>Right | Fuel<br>Left | Fuel<br>Right | Valve<br>Left | Valve<br>Right | Discharge<br>1 | Discharge<br>2 | IN          | 120 | 120          | ↓<br>See |
| 1 558            | 1 564          | 1 83         | 1 83          | 1 83          | 1 83           | 1 186          |                |             |     |              |          |
| 2 600            | 2 622          | 2 82         | 2 82          | 2 80          | 2 80           | 2 187          |                |             |     |              |          |
| 3 559            | 3 573          | 3 79         | 3 79          | 3 78          | 3 78           | 3 186          |                |             |     |              |          |
| 4 607            | 4 642          | 4 80         | 4 80          | 4 77          | 4 77           | 4 189          |                |             |     |              |          |
| 5 560            | 5 599          | 5 92         | 5 92          | 5 77          | 5 77           |                |                |             |     |              |          |

| AVERAGES    |       | AVERAGES   |      | AVERAGE |  | AVERAGE |  | AVERAGE |  | AVERAGE |  |
|-------------|-------|------------|------|---------|--|---------|--|---------|--|---------|--|
| L 580       | R 598 | L 81       | R 79 |         |  | 187     |  |         |  |         |  |
| OVERALL 589 |       | OVERALL 80 |      |         |  |         |  |         |  |         |  |

|                    |                    |             |                       |
|--------------------|--------------------|-------------|-----------------------|
| Engine Oil IN 141  | PreTurbine EX 689  | Fuel Supply | Gas Discharge IN 191  |
| Engine Oil OUT 156 | PostTurbine EX 509 |             | Gas Discharge OUT 100 |
| Turbo Lube Oil 149 | Exhaust Stack 42   | 55          | Difference 91 SP      |

181 :REGEN.HEATER.ALRM  
Eng Oper Sta Misc StaYardA StaYardB Sta Mode SetPoint 0 OFF Eng Menu NORMAL C MainMenu

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## STATION 02

Engine Running and Loaded

|                                |           |
|--------------------------------|-----------|
| ENGINE RUNNING STATUS          |           |
| Control                        | AUTO      |
| Load Step                      | 0         |
| Horsepower                     | 4264 BHP  |
| Engine Speed:                  |           |
| Actual                         | 329 RPM   |
| Set Point                      | 0 %       |
| Engine Torque:                 |           |
| Actual                         | 101 %     |
| Set Point                      | 100 %     |
| TURBOCHARGER STATUS            |           |
| Turbine Speed                  | 12223 RPM |
| Air Manifold Pressure 37.4 "Hg |           |

## ENGINE 01 OPERATION DATA

## GAS FLOW

|                        |      |
|------------------------|------|
| Suction Header         | 1    |
| Suction Press          | 651  |
| Discharge Header       | 1    |
| Discharge Press        | 1587 |
| ---Pumping Capacity--- |      |
| Minimum(MMCFD)         | 68   |
| Maximum(MMCFD)         | 113  |
| ---Fuel Usage---       |      |
| Pressure(PSI)          | 96   |
| Differ("H2O)           | 75   |
| Flowrate(MCFH)         | 33   |

ALM 3 12:47:49  
TIoga Storage

## PRESSURES (PSI)

|                 |    |
|-----------------|----|
| Engine Lube Oil | 51 |
| PreOil Filter   | 69 |
| PreOil Strainer | 56 |
| Turbo Oil       | 18 |
| Jacket Water    | 13 |
| Fuel Manifold   | 26 |

## MISCELLANEOUS

IgnitionTiming

|                |       |
|----------------|-------|
| Exhaust Oxygen | <<< X |
| Turbo Bypass   | 36 %  |

|          |          |
|----------|----------|
| B OFF    | NORMAL C |
| Eng Menu | MainMenu |

A1 :REGEN,HEATER,ALRM

1earnsDs Eng Temp StaYardA StaYardB Sta Mode SetPoint

10 - 17 - 87

| STATION 02             |                    | POWER CYLINDERS |          | ENGINE 01  |            | TEMPERATURE ( F ) |    | DATA                     |               | ALM 2 12:48:05  |         |
|------------------------|--------------------|-----------------|----------|------------|------------|-------------------|----|--------------------------|---------------|-----------------|---------|
| CYLINDER               | HEADS              | FUEL            | VALVES   | COMPRESSOR | DISCHARGES |                   |    | Temperature Control Fans | T10GA STORAGE |                 |         |
| Left                   | Right              | Left            | Right    |            |            |                   |    | Air Manifold             | 121           | 120             |         |
| 1                      | 558                | 1               | 552      | 1          | 82         | 1                 | 83 | 1                        | 186           | After Water IN  | 119 SF  |
| 2                      | 599                | 2               | 621      | 2          | 82         | 2                 | 81 | 2                        | 186           | After Water OUT | 130     |
| 3                      | 558                | 3               | 572      | 3          | 80         | 3                 | 78 | 3                        | 186           | Difference      | -11     |
| 4                      | 507                | 4               | 549      | 4          | 80         | 4                 | 77 | 4                        | 186           | Fan #1 Control  | 11 100% |
| 5                      | 580                | 5               | 597      | 5          | 82         | 5                 | 78 |                          |               | Fan #2 Control  | 11 SF   |
| AVERAGES               |                    | AVERAGES        |          | AVERAGE    |            | Jacket Water IN   |    | 150                      |               |                 |         |
| L 580                  | R 596              | L 81            | R 79     |            |            |                   |    | Jacket Water OUT         | 160           | 160             |         |
| OVERALL 588            |                    | OVERALL 80      |          |            |            |                   |    | Difference               | -10 SF        |                 |         |
| Engine Oil IN 143      | PreTurbine EX 688  | Fuel            |          |            |            |                   |    | Fan #1 Control           | 8 100%        |                 |         |
| Engine Oil OUT 155     | PostTurbine EX 506 | Supply          |          |            |            |                   |    | Fan #2 Control           | 8 SF          |                 |         |
| Turbo Lube Oil 151     | Exhaust Stack 40   | 64              |          |            |            |                   |    |                          |               |                 |         |
| A1 :REGEN.HEATER.ALARM |                    |                 |          |            |            |                   |    |                          |               |                 |         |
| ng Oper Sta Misc       | StaYardA           | StaYardB        | Sta Mode | SetPoint   | 0 OFF      |                   |    | Eng Menu                 | NORMAL C      | MaintMenu       |         |

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| STATION 02                     |           | ENGINE 01 OPERATION DATA |          | ALM 3 12:47:34                |          |
|--------------------------------|-----------|--------------------------|----------|-------------------------------|----------|
| Engine Running and Loaded      |           | GAS FLOW                 |          | TIoga Storage Pressures (PSI) |          |
| Control                        | AUTO      | Suction Header           | 1        | Engine Lube Oil               | 51       |
| Load Step                      | 0         | Suction Press            | 651      | PreOil Filter                 | 59       |
| Horsepower                     | 4266 BHP  | Discharge Header         | 1        | PreOil Strainer               | 56       |
| Engine Speed:                  |           | Discharge Press          | 1588     | Turbo Oil                     | 18       |
| Actual                         | 329 RPM   | ----Pumping Capacity---- |          | Jacket Water                  | 13       |
| Set Point                      | 0 %       | Minimum(MMCFD)           | 68       | Fuel Manifold                 | 26       |
| Engine Torque:                 |           | Maximum(MMCFD)           | 113      | MISCELLANEOUS                 |          |
| Actual                         | 102 %     | ----Fuel Usage----       |          | Ignition Timing               | 7        |
| Set Point                      | 100 %     | Pressure(PSI)            | 96       | Exhaust Oxygen                | 0 %      |
| TURBOCHARGER STATUS            |           | Differ("H2O)             | 75       | Turbo Bypass                  | 56 %     |
| Turbine Speed                  | 12229 RPM | Flowrate(MCFH)           | 33       |                               |          |
| Air Manifold Pressure 37.4 "Hg |           |                          |          |                               |          |
| !01 :REGEN,HEATER,ALRM         |           |                          |          |                               |          |
| !clearSDs                      | Eng Temp  | StaYardA                 | StaYardB | Sta Mode                      | SetPoint |
|                                |           |                          |          |                               | 0 OFF    |
|                                |           |                          |          |                               | Eng Menu |
|                                |           |                          |          |                               | NORMAL C |
|                                |           |                          |          |                               | MainMenu |

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| STATION 02             |                    | POWER CYLINDERS |          | ENGINE 01  |       | TEMPERATURE ( F ) |     | DATA                     |     | ALM 3 12:47:58 |  |
|------------------------|--------------------|-----------------|----------|------------|-------|-------------------|-----|--------------------------|-----|----------------|--|
| CYLINDER               | HEADS              | FUEL            | VALVES   | COMPRESSOR |       | DISCHARGES        |     | Temperature Control Fans |     | TIoga Storage  |  |
| Left                   | Right              | Left            | Left     | Right      | Right |                   |     | Air Manifold             | 121 | 120            |  |
| 1 588                  | 1 552              | 1               | 82       | 1          | 83    | 1                 | 186 | After Water IN           | 116 | SP             |  |
| 2 599                  | 2 621              | 2               | 82       | 2          | 81    | 2                 | 187 | After Water OUT          | 130 |                |  |
| 3 558                  | 3 572              | 3               | 79       | 3          | 78    | 3                 | 186 | Difference               | -14 |                |  |
| 4 607                  | 4 640              | 4               | 80       | 4          | 77    | 4                 | 186 | Fan #1 Control           | 14  | 100%           |  |
| 5 580                  | 5 597              | 5               | 83       | 5          | 78    |                   |     | Fan #2 Control           | 14  | RF             |  |
| AVERAGES               |                    | AVERAGES        |          | AVERAGE    |       | Jacket Water IN   |     | 150                      |     |                |  |
| L 580                  | R 596              | L 81            | R 79     | 186        |       | Jacket Water OUT  | 160 | 160                      |     |                |  |
| OVERALL 588            |                    | OVERALL 80      |          |            |       | Difference        | -10 | SP                       |     |                |  |
| Engine Oil IN 143      | FreTurbine EX 697  | Fuel            |          |            |       | Fan #1 Control    | 8   | 100%                     |     |                |  |
| Engine Oil OUT 155     | PostTurbine EX 507 | Supply          |          |            |       | Fan #2 Control    | 8   | RF                       |     |                |  |
| Turbo Lube Oil 147     | Exhaust Stack 40   | 64              |          |            |       |                   |     |                          |     |                |  |
| AI : REGEN,HEATER,ALRM |                    | SetPoint        |          | 0 OFF      |       | NORMAL C          |     |                          |     |                |  |
| ng Oper Sta Misc       | StayardsA          | StayardsB       | Sta Mode |            |       | Eng Menu          |     |                          |     |                |  |
|                        |                    |                 |          |            |       | MainMenu          |     |                          |     |                |  |

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## STATION 02

Engine Running and Loaded

## ENGINE RUNNING STATUS

|                     |           |
|---------------------|-----------|
| Control             | AUTO      |
| Load Step           | 0         |
| Horsepower          | 4290 BHP  |
| Engine Speed:       |           |
| Actual              | 329 RPM   |
| Set Point           | 0 %       |
| Engine Torque:      |           |
| Actual              | 102 %     |
| Set Point           | 100 %     |
| TURBOCHARGER STATUS |           |
| Turbine Speed       | 12277 RPM |

Air Manifold Pressure 37.8 "Hg

!A1 :REGEN.HEATER.ALRM

|          |          |          |          |          |          |          |          |   |
|----------|----------|----------|----------|----------|----------|----------|----------|---|
| ClearSDs | Eng Temp | StaYardA | StaYardB | Sta Mode | SetPoint | 0 OFF    | NORMAL   | C |
|          |          |          |          |          |          | Eng Menu | MainMenu |   |

ENGINE 01 OPERATION DATA  
GAS FLOW

|                          |      |
|--------------------------|------|
| Suction Header           | 1    |
| Suction Press            | 651  |
| Deschrge Header          | 2    |
| Deschrge Press           | 1588 |
| ----Pumping Capacity---- |      |
| Minimum(MMCFD)           | 68   |
| Maximum(MMCFD)           | 113  |
| -----Fuel Usage-----     |      |
| Pressure(PSI)            | 95   |
| Differ("H2O)             | 76   |
| Flowrate(MCFH)           | 33   |

ALM 3 12:20:03

TIoga Storage

PRESSURES (PSI)

Engine Lube Oil 51

PreOil Filter 59

PreOil Strainer 56

Turbo Oil 18

Jacket Water 13

Fuel Manifold 36

## MISCELLANEOUS

IgnitionTiming 7

Exhaust Oxygen&lt;&lt;&lt; 7

Turbo Bypass 34 %

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| STATION #2            |                    |          |            |                             |          |            |                           |                          |     | ALM 3 12:20:37           |
|-----------------------|--------------------|----------|------------|-----------------------------|----------|------------|---------------------------|--------------------------|-----|--------------------------|
| CYLINDER              | POWER CYLINDERS    |          |            | ENGINE #1 TEMPERATURE ( F ) |          |            | COMPRESSOR DATA           |                          |     | TIOGA STORAGE            |
|                       | HEADS              | FUEL     | VALVES     | Left                        | Right    | DISCHARGES | Air Manifold              | Temperature Control Fans |     |                          |
| 1 Left                | 557                | 1        | 552        | 1                           | 82       | 1          | 83                        | 1                        | 186 | 121 120                  |
| 2 Right               | 599                | 2        | 620        | 2                           | 82       | 2          | 80                        | 2                        | 187 | After Water IN 115 SP    |
| 3                     | 554                | 3        | 572        | 3                           | 80       | 3          | 78                        | 3                        | 186 | After Water OUT 131      |
| 4                     | 607                | 4        | 639        | 4                           | 80       | 4          | 78                        | 4                        | 186 | Difference -15           |
| 5                     | 577                | 5        | 599        | 5                           | 83       | 5          | 77                        |                          |     | Fan #1 Control 11 100%   |
|                       |                    |          |            |                             |          |            |                           |                          |     | Fan #2 Control 11 BP     |
| AVERAGES              |                    |          |            |                             |          |            |                           |                          |     | Jacket Water IN 152      |
| L 578                 | R 596              |          | L 81       | R 79                        |          | AVERAGE    |                           |                          |     | Jacket Water OUT 160 160 |
| OVERALL 587           |                    |          | OVERALL 80 |                             |          | 186        |                           |                          |     | Difference -8 SP         |
| Engine Oil IN 143     | PreTurbine EX 687  | Fuel     |            |                             |          |            | Gas Discharge IN 190      |                          |     |                          |
| Engine Oil OUT 156    | PostTurbine EX 507 | Supply   |            |                             |          |            | Gas Discharge OUT 100 100 |                          |     |                          |
| Turbo Lube Oil 154    | Exhaust Stack 42   | 64       |            |                             |          |            | Difference 90 SP          |                          |     |                          |
|                       |                    |          |            |                             |          |            | Fan #1 Control 53         |                          |     |                          |
|                       |                    |          |            |                             |          |            | Fan #2 Control 53         |                          |     |                          |
| #1 :REGEN,HEATER,ALRM |                    |          |            |                             |          |            |                           |                          |     |                          |
| mg Oper Sta Misc      | StayardA           | StayardB | Sta Mode   | SetPoint                    | 0 OFF    |            |                           |                          |     | NORMAL C                 |
|                       |                    |          |            |                             | Eng Menu |            |                           |                          |     | MainMenu                 |

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## STATION 02

ENGINE 01 OPERATION DATA  
GAS FLOW

Engine Running and Loaded

## ENGINE RUNNING STATUS

|                     |           |
|---------------------|-----------|
| Control             | AUTO      |
| Load Step           | 0         |
| Horsepower          | 4272 BHP  |
| Engine Speed:       |           |
| Actual              | 330 RPM   |
| Set Point           | 0 %       |
| Engine Torque:      |           |
| Actual              | 102 %     |
| Set Point           | 100 %     |
| TURBOCHARGER STATUS |           |
| Turbine Speed       | 12282 RPM |

Air Manifold Pressure 37.8 "Hg

A1 :REGEN,HEATER,ALRM  
GearSDs Eng Temp StaYardA StaYardB Sta Mode SetPointALM 3 12:20:17  
TIGER STDRADE

PRESSURES (PSI)

Engine Lube Oil 54

PreOil Filter 59

PreOil Strainer 58

Turbo Oil 13

Jacket Water 13

Fuel Manifold 34

MISCELLANEOUS  
Ignition Timing 7

Exhaust Oxygen 0.00 %

Turbo Bypass 34 %

0 OFF NORMAL C  
Eng Menu MainMenu

/0 - / 2-8 9

| STATION 02             |                    |            |          |                                  |          |          |   |                  |         | ALM 3 12:20:34 |  |
|------------------------|--------------------|------------|----------|----------------------------------|----------|----------|---|------------------|---------|----------------|--|
| POWER CYLINDERS        |                    |            |          | ENGINE 01 TEMPERATURE ( F ) DATA |          |          |   | TIOGA STORAGE    |         |                |  |
| CYLINDER               | HEADS              | FUEL       | VALVES   | COMPRESSOR DISCHARGES            |          |          |   | Temperature      | Control | Fans           |  |
| Left                   | Right              | Left       | Right    | 1                                | 2        | 3        | 4 | Air Manifold     | 120     | 120            |  |
| 1 557                  | 1 554              | 1 82       | 1 83     | 1                                | 2        | 3        | 4 | After Water IN   | 115     | SP             |  |
| 2 597                  | 2 619              | 2 82       | 2 80     |                                  |          |          |   | After Water OUT  | 131     |                |  |
| 3 555                  | 3 571              | 3 80       | 3 79     |                                  |          |          |   | Difference       | -16     |                |  |
| 4 606                  | 4 639              | 4 79       | 4 77     |                                  |          |          |   | Fan #1 Control   | 11      | 100%           |  |
| 5 578                  | 5 597              | 5 82       | 5 79     |                                  |          |          |   | Fan #2 Control   | 11      | SP             |  |
| AVERAGES               |                    |            |          | AVERAGES                         |          |          |   | Jacket Water IN  | 151     |                |  |
| L 578                  | R 595              | L 81       | R 79     | AVERAGE                          |          |          |   | Jacket Water OUT | 160     | 160            |  |
| OVERALL 586            |                    | OVERALL 60 |          | 185                              |          |          |   | Difference       | -9      | SP             |  |
| Engine Oil IN 141      | PreTurbine EX 686  | Fuel       |          | Gas Discharge IN                 |          |          |   | Fan #1 Control   | 8       | 100%           |  |
| Engine Oil OUT 156     | PostTurbine EX 504 | Supply     |          | Gas Discharge OUT                |          |          |   | Fan #2 Control   | 9       | SP             |  |
| Turbo Lube Oil 149     | Exhaust Stack 40   | 62         |          | Difference                       |          |          |   |                  |         |                |  |
|                        |                    |            |          | Fan #1 Control                   |          |          |   |                  |         |                |  |
|                        |                    |            |          | Fan #2 Control                   |          |          |   |                  |         |                |  |
| !AI :SEGEN,HEATER,ALRM | End Oper Sta Misc  | StaYardA   | StaYardB | Sta Mode                         | SetPoint | 0 OFF    |   | NORMAL C         |         |                |  |
|                        |                    |            |          |                                  |          | Eng Menu |   | MainMenu         |         |                |  |

F... 3 (6)

STATION 62

ENGINE 01 OPERATION DATA  
GAS ELON

### Engine Running and Loaded

## ENGINE RUNNING STATES

|                                |           |
|--------------------------------|-----------|
| Control                        | AUTO      |
| Load Step                      | 0         |
| Horsepower                     | 4225 SHp  |
| Engine Speed:                  |           |
| Actual                         | 328 RPM   |
| Set Point                      | 0 %       |
| Engine Torque:                 |           |
| Actual                         | 101 %     |
| Set Point                      | 100 %     |
| TURBOCHARGER STATUS            |           |
| Turbine Speed                  | 12245 RPM |
| Air Manifold Pressure 37.3 "Hg |           |

|                         |      |
|-------------------------|------|
| Suction Header          | 1    |
| Suction Press           | 644  |
| Discharge Header        | 2    |
| Discharge Press         | 1587 |
| <b>Pumping Capacity</b> |      |
| Minimum(MMCFD)          | 66   |
| Maximum(MMCFD)          | 111  |
| <b>Fuel Usage</b>       |      |
| Pressure(PSI)           | 96   |
| Differ("H2O")           | 74   |
| Flowrate(MCFH)          | 32   |

WYS:27

**TIDGA STORAGE  
URES (PSI)**

|                  |    |
|------------------|----|
| Engine Lube Oil  | 51 |
| FreOil Filter    | 59 |
| PrecOil Strainer | 56 |
| Turbo Oil        | 18 |
| Jacket Water     | 13 |
| Fuel Manifold    | 35 |

## MISCELLANEOUS Ignition Timing 7

#### Exhaust Oxygen Content

Turbo Bypasses 78 %

0 OFF NORMAL 0  
Eng Menu MainMenu

10-17-89

61 : REGEN. HEATER, ALR  
Leadsides Eng Temp 65

YearsDS Eng Temp StaYards StaYardB Sta Mode SetPoint @ OFF Eng Menu NORMAL C MainMenu

## F-37

STATION 02

|                    |       | POWER CYLINDERS    |        | ENGINE 01 TEMPERATURE ( F ) |       | COMPRESSOR DATA   |     | TIoga Storage   |              |
|--------------------|-------|--------------------|--------|-----------------------------|-------|-------------------|-----|-----------------|--------------|
| CYLINDER           | HEADS | FUEL               | VALVES | Left                        | Right | DISCHARGES        |     | Temperature     | Control Fans |
| Left               | Right |                    |        |                             |       |                   |     | Air Manifold    | 120 120      |
| 1                  | 556   | 1                  | 552    | 1                           | 78    | 1                 | 81  | After Water IN  | 113 SP       |
| 2                  | 595   | 2                  | 620    | 2                           | 81    | 2                 | 79  | After Water OUT | 131 1146.22  |
| 3                  | 552   | 3                  | 570    | 3                           | 79    | 3                 | 75  | Difference      | -18          |
| 4                  | 605   | 4                  | 638    | 4                           | 79    | 4                 | 75  | Fan #1 Control  | 11 100%      |
| 5                  | 578   | 5                  | 597    | 5                           | 82    | 5                 | 77  | Fan #2 Control  | 11 BP        |
| AVERAGES           |       | AVERAGES           |        | AVERAGE                     |       | Jacket Water IN   |     | 150             |              |
| L 577              | R 595 | L 79               | R 77   | 187                         |       | Jacket Water OUT  | 160 | 160             |              |
| OVERALL 586        |       | OVERALL 78         |        |                             |       | Difference        | -10 | SP              |              |
| Engine Oil IN 141  |       | PreTurbine EX 684  |        | Fuel Supply                 |       | Gas Discharge IN  | 191 |                 |              |
| Engine Oil OUT 155 |       | PostTurbine EX 596 |        | Exhaust Stack 40            |       | Gas Discharge OUT | 100 | 100             |              |
| Turbo Lube Oil 149 |       |                    |        | SI                          |       | Difference        | 91  | SP              |              |
|                    |       |                    |        |                             |       | Fan #1 Control    | 52  |                 |              |
|                    |       |                    |        |                             |       | Fan #2 Control    | 52  |                 |              |

A1 :REGEN,HEATER,ALRM

|          |          |          |          |          |          |          |          |
|----------|----------|----------|----------|----------|----------|----------|----------|
| Eng Oper | Sta Misc | StaYardA | StaYardB | Sta Mode | SetPoint | 0 OFF    | NORMAL C |
|          |          |          |          |          |          | Eng Menu | MainMenu |

F-38

STATION #2

ENGINE 01 OPERATION DATA  
GAS FLOW

Engine Running and Loaded

## ENGINE RUNNING STATUS

|                     |           |
|---------------------|-----------|
| Control             | AUTO      |
| Load Step           | 0         |
| Horsepower          | 4224 BHP  |
| Engine Speed:       |           |
| Actual              | 330 RPM   |
| Set Point           | 0 %       |
| Engine Torque:      |           |
| Actual              | 101 %     |
| Set Point           | 100 %     |
| TURBOCHARGER STATUS |           |
| Turbine Speed       | 12240 RPM |

Air Manifold Pressure 37.0 "Hg

|                          |      |
|--------------------------|------|
| Suction Header           | 1    |
| Suction Press            | 645  |
| Oschrge Header           | 2    |
| Oschrge Press            | 1587 |
| ----Pumping Capacity---- |      |
| Minimum(MMCFD)           | 67   |
| Maximum(MMCFD)           | 111  |
| -----Fuel Usage-----     |      |
| Pressure(PSI)            | 96   |
| Differ("H2O)             | 73   |
| Flowrate(MCFH)           | 32   |

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//45!46

TIQGA STORAGE  
PRESSURES (PSI)

|                 |    |
|-----------------|----|
| Engine Lube Oil | 51 |
| PreOil Filter   | 59 |
| PreOil Strainer | 56 |
| Turbo Oil       | 13 |
| Jacket Water    | 13 |
| Fuel Manifold   | 35 |

## MISCELLANEOUS

|                |      |
|----------------|------|
| IgnitionTiming | 7    |
| Exhaust Oxygen | << % |
| Turbo Bypass   | 28 % |

61 :REGEN,HEATER,ALRM

|       |          |          |          |          |          |          |          |   |
|-------|----------|----------|----------|----------|----------|----------|----------|---|
| Years | Eng Temp | StaYardA | StaYardB | Sta Mode | SetPoint | 0 OFF    | NORMAL   | 0 |
|       |          |          |          |          |          | Eng Menu | MainMenu |   |

10-17-89

STATION 02

|                |       | POWER CYLINDERS |        | ENGINE 01 TEMPERATURE ( F ) |       | COMPRESSOR DISCHARGES |       | DATA             |         | TIOGA STORAGE   |             |
|----------------|-------|-----------------|--------|-----------------------------|-------|-----------------------|-------|------------------|---------|-----------------|-------------|
| CYLINDER       | HEADS | FUEL            | VALVES | Left                        | Right | Left                  | Right | Temperature      | Control | Fans            |             |
| 1              | 554   | 1               | 551    | 1                           | 81    | 1                     | 81    | 1                | 187     | Air Manifold    | 120 120     |
| 2              | 598   | 2               | 620    | 2                           | 81    | 2                     | 79    | 2                | 189     | After Water IN  | 113 SP      |
| 3              | 554   | 3               | 568    | 3                           | 79    | 3                     | 75    | 3                | 186     | After Water OUT | 131 1146.05 |
| 4              | 602   | 4               | 638    | 4                           | 78    | 4                     | 77    | 4                | 186     | Difference      | -18         |
| 5              | 576   | 5               | 597    | 5                           | 82    | 5                     | 77    |                  |         | Fan #1 Control  | 11 100%     |
|                |       |                 |        |                             |       |                       |       |                  |         | Fan #2 Control  | 11 BP       |
| AVERAGES       |       | AVERAGES        |        | AVERAGE                     |       | AVERAGE               |       | Jacket Water IN  |         | 149             |             |
| L 576          | R 594 | L 80            | R 77   | L 80                        | R 77  | L 80                  | R 77  | Jacket Water OUT | 160     | 162             |             |
| OVERALL 585    |       | OVERALL 78      |        | OVERALL 78                  |       | OVERALL 78            |       | Difference       | -11     | SP              |             |
| Engine Oil IN  | 144   | PreTurbine EX   | 584    | Fuel                        |       | Gas Discharge IN      | 191   | Fan #1 Control   | 7       | 100%            |             |
| Engine Oil OUT | 155   | PostTurbine EX  | 504    | Supply                      |       | Gas Discharge OUT     | 100   | Fan #2 Control   | 7       | BP              |             |
| Turbo Lube Oil | 152   | Exhaust Stack   | 37     | 64                          |       | Difference            | 91    |                  |         |                 |             |
|                |       |                 |        |                             |       | Fan #1 Control        | 52    |                  |         |                 |             |
|                |       |                 |        |                             |       | Fan #2 Control        | 52    |                  |         |                 |             |

A1 :REGEN,HEATER,ALRM

| Eng Oper | Sta Misc | StaYardA | StaYardB | Sta Mode | SetPoint | 0 OFF | NORMAL | 0 | MainMenu |
|----------|----------|----------|----------|----------|----------|-------|--------|---|----------|
|----------|----------|----------|----------|----------|----------|-------|--------|---|----------|

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10-17-89

STATION 02

ENGINE 01 OPERATION DATA  
GAS FLOW

Engine Running and Loaded

## ENGINE RUNNING STATUS

|                |          |
|----------------|----------|
| Control        | AUTO     |
| Load Step      | 0        |
| Horsepower     | 4227 BHP |
| Engine Speed:  |          |
| Actual         | 329 RPM  |
| Set Point      | 0 %      |
| Engine Torque: |          |
| Actual         | 101 %    |
| Set Point      | 100 %    |

TURBOCHARGER STATUS

Turbine Speed 12250 RPM

Air Manifold Pressure 37.3 "Hg

|                          |      |
|--------------------------|------|
| Suction Header           | 1    |
| Suction Press            | 646  |
| Deschrgae Header         | 2    |
| Deschrgae Press          | 1587 |
| ----Pumping Capacity---- |      |
| Minimum(MMCFD)           | 67   |
| Maximum(MMCFD)           | 112  |
| ----Fuel Usage----       |      |
| Pressure(PSI)            | 96   |
| Differ("H2O")            | 74   |
| Flowrate(MOFH)           | 32   |

|                 |       |
|-----------------|-------|
| ALM & 11:15:25  |       |
| TIOGA STORAGE   |       |
| PRESSURES (PSI) |       |
| Engine Lube Oil | 51    |
| PreOil Filter   | 59    |
| PreOil Strainer | 56    |
| Turbo Oil       | 18    |
| Jacket Water    | 13    |
| Fuel Manifold   | 35    |
| MISCELLANEOUS   |       |
| Ignition Timing | 7     |
| Exhaust Oxygen  | 0.0 % |
| Turbo Bypass    | 27 %  |

DC : INSTRAIR.PRES.

|          |          |          |          |          |          |           |          |
|----------|----------|----------|----------|----------|----------|-----------|----------|
| ClearSDs | Eng Temp | StaYardA | StaYardB | Sta Mode | SetPoint | 89.957031 | LOADRM G |
|          |          |          |          |          |          |           | MainMenu |

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STATION 02

| CYLINDER | POWER CYLINDERS |           | ENGINE 01 |        | TEMPERATURE ( F ) |       | COMPRESSOR<br>DISCHARGES | DATA  |
|----------|-----------------|-----------|-----------|--------|-------------------|-------|--------------------------|-------|
|          | HEADS           | CYLINDERS | FUEL      | VALVES | Left              | Right |                          |       |
| 1        | 554             | 1         | 550       | 4      | 78                | 1     | 79                       | 1 188 |
| 2        | 597             | 2         | 618       | 2      | 78                | 2     | 77                       | 2 188 |
| 3        | 555             | 3         | 569       | 3      | 77                | 3     | 75                       | 3 187 |
| 4        | 603             | 4         | 638       | 4      | 77                | 4     | 75                       | 4 187 |
| 5        | 577             | 5         | 598       | 5      | 79                | 5     | 75                       |       |

## AVERAGES

L 577 R 594

OVERALL 585

AVERAGES  
L 77 R 76  
OVERALL 76AVERAGE  
187

Engine Oil IN 141

Engine Oil OUT 155

Turbo Lube Oil 152

PreTurbine EX 587  
PostTurbine EX 509  
Exhaust Stack 57Fuel Supply  
60ALM 6 11:15:54  
TIoga Storage

|                          |         |
|--------------------------|---------|
| Temperature Control Fans |         |
| Air Manifold             | 121 120 |
| After Water IN           | 115 SP  |
| After Water OUT          | 130     |
| Difference               | -15     |
| Fan #1 Control           | 9 100%  |
| Fan #2 Control           | 9 SP    |

|                  |         |
|------------------|---------|
| Jacket Water IN  | 131     |
| Jacket Water OUT | 159 160 |
| Difference       | -8 SP   |
| Fan #1 Control   | 7 100%  |
| Fan #2 Control   | 7 SP    |

|                   |         |
|-------------------|---------|
| Gas Discharge IN  | 192     |
| Gas Discharge OUT | 100 100 |
| Difference        | -92 SP  |
| Fan #1 Control    | 52      |
| Fan #2 Control    | 52      |

DC : INSTRAIR.PRES.

|                   |          |          |          |           |          |
|-------------------|----------|----------|----------|-----------|----------|
| Eng Oper Sta Misc | StaYardA | StaYardB | Sta Mode | 89.957031 | LOADRM G |
|                   |          |          |          | SetPoint  | Eng Menu |
|                   |          |          |          |           | MainMenu |

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10-17-89

STATION 02

Engine Running and Loaded

## ENGINE RUNNING STATUS

|                     |           |
|---------------------|-----------|
| Control             | AUTO      |
| Load Step           | 0         |
| Horsepower          | 4227 BHP  |
| Engine Speed:       |           |
| Actual              | 329 RPM   |
| Set Point           | 0 %       |
| Engine Torque:      |           |
| Actual              | 101 %     |
| Set Point           | 100 %     |
| TURBOCHARGER STATUS |           |
| Turbine Speed       | 12250 RPM |

Air Manifold Pressure 37.3 "Hg

## ENGINE 01 OPERATION DATA

## GAS FLOW

|                          |      |
|--------------------------|------|
| Suction Header           | 1    |
| Suction Press            | 646  |
| Discharge Header         | 2    |
| Discharge Press          | 1587 |
| ----Pumping Capacity---- |      |
| Minimum(MMCFD)           | 67   |
| Maximum(MMCFD)           | 112  |
| ----Fuel Usage----       |      |
| Pressure(PSI)            | 96   |
| Differ("H2O)             | 74   |
| Flowrate(MCFH)           | 32   |

ALM 6 11:15:24

TIoga Storage

## PRESSURES (PSI)

|                 |    |
|-----------------|----|
| Engine Lube Oil | 51 |
| PreOil Filter   | 59 |
| PreOil Strainer | 56 |
| Turbo Oil       | 18 |
| Jacket Water    | 13 |
| Fuel Manifold   | 35 |

## MISCELLANEOUS

IgnitionTiming 7

Exhaust Oxygen&lt;&lt;&lt; %

Turbo Bypass 27 %

DC : INSTRAIR.PRES.

|          |          |          |          |          |          |           |          |
|----------|----------|----------|----------|----------|----------|-----------|----------|
| ClearSDs | Eng Temp | StaYardA | StaYardB | Sta Mode | SetPoint | 99.957031 | LOALRM B |
|          |          |          |          |          | Eng Menu | MainMenu  |          |

/D - 17 - 89

| STATION 02         |       | ENGINE 01          |        | TEMPERATURE ( F )     |       | DATA              | ALM 6 11:19:55 | TIOGA STORAGE |
|--------------------|-------|--------------------|--------|-----------------------|-------|-------------------|----------------|---------------|
| POWER CYLINDERS    |       | FUEL               | VALVES | COMPRESSOR DISCHARGES |       | Temperature       | Control Fans   |               |
| CYLINDER           | HEADS | Left               | Right  | Left                  | Right | Air Manifold      | 121            | 120           |
| 1                  | 554   | 1                  | 550    | 1                     | 78    | 1                 | 79             | 1 188         |
| 2                  | 597   | 2                  | 618    | 2                     | 78    | 2                 | 77             | 2 188         |
| 3                  | 555   | 3                  | 569    | 3                     | 77    | 3                 | 75             | 3 187         |
| 4                  | 603   | 4                  | 638    | 4                     | 77    | 4                 | 75             | 4 187         |
| 5                  | 577   | 5                  | 598    | 5                     | 79    | 5                 | 75             |               |
| AVERAGES           |       | AVERAGES           |        | AVERAGE               |       | Jacket Water IN   | 151            |               |
| L 577              | R 594 | L 77               | R 76   | 187                   |       | Jacket Water OUT  | 159            | 160           |
| OVERALL 585        |       | OVERALL 76         |        |                       |       | Difference        | -8             | SP            |
| Engine Oil IN 141  |       | PrefTurbine EX 687 |        | Fuel                  |       | Fan #1 Control    | 7              | 100%          |
| Engine Oil OUT 155 |       | PostTurbine EX 509 |        | Supply                |       | Fan #2 Control    | 7              | SP            |
| Turbo Lube Oil 152 |       | Exhaust Stack 37   |        | 60                    |       | Gas Discharge IN  | 192            |               |
|                    |       |                    |        |                       |       | Gas Discharge OUT | 196            | 100           |
|                    |       |                    |        |                       |       | Difference        | 92             | SP            |
|                    |       |                    |        |                       |       | Fan #1 Control    | 52             |               |
|                    |       |                    |        |                       |       | Fan #2 Control    | 52             |               |

:DC :INSTRAIR.PRES.  
 Eng Oper Sta Misc StaYardA StaYardB Sta Mode  
 17-OCT-89 11:19:26.44 A1 :REGEN.HEATER.ALARM

89.957031 LOALRM G  
 SetPoint Eng Menu MainMenu  
 1 ON ALARM C

STATION 02

ENGINE 01 OPERATION DATA  
GAS FLOW

### Engine Running and Loaded

## ENGINE RUNNING STATUS

Control AUTO  
Load Step 0  
Horsepower 4240 BHP  
Engine Speed:

Actual Total

Set Point

Set Point Engine Torque:

Actual 1990

Set Point 120.0

TURBOCHARGED STATUS

Turbine Speed 13274 RPM

#### Air Manifold Frequency Test

|                        |      |
|------------------------|------|
| Suction Header         | 1    |
| Suction Press          | 645  |
| Dechrge Header         | 2    |
| Dechrge Press          | 1588 |
| ---Pumping Capacity--- |      |
| Minimum(MMCFD)         | 67   |
| Maximum(MMCFD)         | 111  |
| ---Fuel Usage---       |      |
| Pressure(PSI)          | 96   |
| Differ("H2O")          | 74   |
| Flowrate(MCFH)         | 32   |

10-17-89 ALM 6 10:46:02  
TIGGA STORAGE  
PRESSURES (PSI)  
Engine Lube Oil 54

Engine Lube Oil 51

#### PreOil Filter

PreOal Strainer

### Turbo (II)

www.vivavida.com

## MISCELLANEOUS Institutional — 7

## CHLORINE OXYGEN INDEX %

### TURBO EXPANSION (%)

957031 LOALRM G  
t Eng Menu MaintMenu

100 : INSTRAIR\_PRES.

ClearSDs Eng Temp StaYardA StaYardB Sta Mode SetPoint Eng Menus MainMenu

10-17-89

ALM 4 10:46:26

TIOGA STORAGE

| STATION 02      |       |                |             |        |   | ENGINE 01 TEMPERATURE ( F ) DATA |     |     |                          |     |      |
|-----------------|-------|----------------|-------------|--------|---|----------------------------------|-----|-----|--------------------------|-----|------|
| POWER CYLINDERS |       |                | FUEL VALVES |        |   | COMPRESSOR DISCHARGES            |     |     | Temperature Control Fans |     |      |
| CYLINDER        | HEADS | Left Right     | Left        | Right  |   | 1                                | 2   | 3   | Air Manifold             | 121 | 120  |
| 1               | 559   | 1 550          | 1           | 78     | 1 | 80                               | 1   | 189 | After Water IN           | 115 | SP   |
| 2               | 595   | 2 618          | 2           | 78     | 2 | 75                               | 2   | 189 | After Water OUT          | 130 |      |
| 3               | 554   | 3 571          | 3           | 75     | 3 | 75                               | 3   | 187 | Difference               | -15 |      |
| 4               | 602   | 4 637          | 4           | 77     | 4 | 75                               | 4   | 188 | Fan #1 Control           | 10  | 100% |
| 5               | 577   | 5 597          | 5           | 77     | 5 | 75                               |     |     | Fan #2 Control           | 10  | BP   |
| AVERAGES        |       |                | AVERAGES    |        |   | AVERAGE                          |     |     | Jacket Water IN          | 150 |      |
| L 576           | R 594 |                | L 77        | R 76   |   | OVERALL                          | 76  | 188 | Jacket Water OUT         | 160 | 150  |
| OVERALL 585     |       |                | OVERALL     | 76     |   |                                  |     |     | Difference               | -10 | SP   |
| Engine Oil IN   | 143   | PreTurbine EX  | 686         | Fuel   |   | Gas Dischrgce IN                 | 191 |     |                          |     |      |
| Engine Oil OUT  | 154   | PostTurbine EX | 509         | Supply |   | Gas Dischrgce OUT                | 99  | 100 |                          |     |      |
| Turbo Lube Oil  | 147   | Exhaust Stack  | 39          | 50     |   | Difference                       | 92  | SP  |                          |     |      |
|                 |       |                |             |        |   | Fan #1 Control                   | 53  |     |                          |     |      |
|                 |       |                |             |        |   | Fan #2 Control                   | 53  |     |                          |     |      |

DC : INSTRAIR.PRES.

Eng Oper Sta Misc

StaYardA StaYardB Sta Mode SetPoint 89.957031 Eng Menu LOALRM 6 MainMenu

STATION 02

ENGINE 01 OPERATION DATA  
GAS FLOW

Engine Running and Loaded

## ENGINE RUNNING STATUS

|                     |           |
|---------------------|-----------|
| Control             | AUTO      |
| Load Step           | 0         |
| Horsepower          | 4232 BHP  |
| Engine Speed:       |           |
| Actual              | 329 RPM   |
| Set Point           | 0 %       |
| Engine Torque:      |           |
| Actual              | 101 %     |
| Set Point           | 100 %     |
| TURBOCHARGER STATUS |           |
| Turbine Speed       | 12229 RPM |

Air Manifold Pressure 37.4 "Hg

|                          |      |
|--------------------------|------|
| Suction Header           | 1    |
| Suction Press            | 646  |
| Deschrgae Header         | 2    |
| Deschrgae Press          | 1588 |
| ----Pumping Capacity---- |      |
| Minimum(MMCFD)           | 67   |
| Maximum(MMCFD)           | 112  |
| ----Fuel Usage----       |      |
| Pressure(PSI)            | 96   |
| Differ("H2O)             | 74   |
| Flowrate(MCFH)           | 32   |

10-17-89  
ALM S 10:45:42  
TIOGA STORAGE

PRESSESURES (PSI)  
 Engine Lube Oil 51  
 PreOil Filter 59  
 PreOil Strainer 56  
 Turbo Oil 18  
 Jacket Water 13  
 Fuel Manifold 35  
 MISCELLANEOUS  
 IgnitionTiming 7

Exhaust Oxygen <<< %  
 Turbo Bypass 32 %

DC : INSTRAIR.PRES.

|          |          |          |          |          |          |           |          |
|----------|----------|----------|----------|----------|----------|-----------|----------|
| ClearSDs | Eng Temp | StaYardA | StaYardB | Sta Mode | SetPoint | 89.957031 | LOALRM 6 |
|          |          |          |          |          |          |           | MainMenu |



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10-17-89

ALM 5 10:06:57

TIOGA STORAGE

## PRESSURES (PSI)

Engine Lube Oil 51

PreOil Filter 60

PreOil Strainer 55

Turbo Oil 17

Jacket Water 13

Fuel Manifold 36

## MISCELLANEOUS

IgnitionTiming 7

Exhaust Oxygen &lt;&lt;&lt; %

Turbo Bypass 35 %

STATION 02

## ENGINE 01 OPERATION DATA

## GAS FLOW

|                            |      |
|----------------------------|------|
| Suction Header             | 1    |
| Suction Press              | 648  |
| Discharge Header           | 2    |
| Discharge Press            | 1588 |
| -----Pumping Capacity----- |      |
| Minimum(MMCFD)             | 68   |
| Maximum(MMCFD)             | 113  |
| -----Fuel Usage-----       |      |
| Pressure(PSI)              | 96   |
| Differ("H2O)               | 74   |
| Flowrate(MCFH)             | 333  |

Engine Running and Loaded

ENGINE RUNNING STATUS

Control AUTO

Load Step 0

Horsepower 4270 BHP

Engine Speed:

    Actual 329 RPM

    Set Point 0 %

Engine Torque:

    Actual 102 %

    Set Point 100 %

TURBOCHARGER STATUS

Turbine Speed 12250 RPM

Air Manifold Pressure 37.6 "Hg

DC : INSTRAIR.PRES.  
 Years DS Eng Temp StaYardA StaYardB Sta Mode SetPoint 89.957031 LOALRM S  
 MainMenu

STATION 02

ENGINE 01 TEMPERATURE ( F ) DATA ALM 6 10:08:08

POWER CYLINDERS T1064 STORAGE

CYLINDER HEADS Temperature Control Fans

Left Right Air Manifold 119 120

1 557 1 552 1 75 1 77 1 187

2 597 2 618 2 75 2 75 2 187

3 554 3 570 3 72 3 72 3 189

4 604 4 536 4 72 4 71 4 186

5 574 5 596 5 75 5 72

Fan #1 Control 9 100%

Fan #2 Control 9 BP

AVERAGES

L 577 R 594

OVERALL 585

AVERAGES

L 73 R 73

OVERALL 73

AVERAGE

187

Jacket Water IN 153

Jacket Water OUT 160 160

Difference -7 SP

Fan #1 Control 7 100%

Fan #2 Control 7 BP

Engine Oil IN 141

PreTurbine EX 594

Fuel

Gas Discharge IN 191

Engine Oil OUT 153

PostTurbine EX 503

Supply

Gas Discharge OUT 100 100

Turbo Lube Oil 150

Exhaust Stack 36

57

Difference 91 SP

Fan #1 Control 54

Fan #2 Control 54

DC : INSTRAIR.PRES.

Eng Oper Sta Misc StaYardA StaYardB Sta Mode 89.957031 LOALRM 6

SetPoint Eng Menu MainMenu

E-50

10-17-89

STATION 02

## ENGINE 01 OPERATION DATA

## GAS FLOW

Engine Running and Loaded

## ENGINE RUNNING STATUS

|                |          |
|----------------|----------|
| Control        | AUTO     |
| Load Step      | 0        |
| Horsepower     | 4267 BHP |
| Engine Speed:  |          |
| Actual         | 329 RPM  |
| Set Point      | 0 %      |
| Engine Torque: |          |
| Actual         | 102 %    |
| Set Point      | 100 %    |

|                            |      |
|----------------------------|------|
| Suction Header             | 1    |
| Suction Press              | 648  |
| Discharge Header           | 2    |
| Discharge Press            | 1568 |
| -----Pumping Capacity----- |      |
| Minimum(MMCFD)             | 67   |
| Maximum(MMCFD)             | 112  |
| -----Fuel Usage-----       |      |
| Pressure(PSI)              | 96   |
| Differ("H2O)               | 75   |
| Flowrate(MCFH)             | 33   |

|                     |           |
|---------------------|-----------|
| TURBOCHARGER STATUS |           |
| Turbine Speed       | 12250 RPM |

Air Manifold Pressure 37.5 "Hg

ALM 6 10:07:15  
 TIoga Storage  
 PRESSURES (PSI)

|                 |    |
|-----------------|----|
| Engine Lube Oil | 51 |
| PreOil Filter   | 60 |
| PreOil Strainer | 56 |
| Turbo Oil       | 17 |
| Jacket Water    | 13 |
| Fuel Manifold   | 25 |

MISCELLANEOUS  
 Ignition Timing 7  
 Exhaust Oxygen <<< %  
 Turbo Bypass 25 %

DC : INSTRAIR.PRES.

|          |          |          |          |          |          |           |          |
|----------|----------|----------|----------|----------|----------|-----------|----------|
| clearSDs | Eng Temp | StaYardA | StaYardB | Sta Mode | SetPoint | 89.957031 | ALARM S  |
|          |          |          |          |          |          |           | MainMenu |

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STATION 042

ENGINE 21

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ALN 6-12:07-51

TILOGA STORAGE

| POWER CYLINDERS |           | FUEL |       | VALVES |       | COMPRESSOR |     | DATA            |             | TIDOGA STORE |      |
|-----------------|-----------|------|-------|--------|-------|------------|-----|-----------------|-------------|--------------|------|
| HEADS           | CYLINDERS | Left | Right | Left   | Right | DISCHARGES |     | Air Manifold    | Temperature | Control      | Fans |
| Right           |           | Left | Right |        |       |            |     | Air Manifold    | 119         | 120          |      |
| 548             | 1         | 75   | 77    | 1      | 77    | 1          | 189 | After Water IN  | 115         | SP           |      |
| 616             | 2         | 75   | 74    | 2      | 74    | 2          | 186 | After Water OUT | 130         |              |      |
| 569             | 3         | 72   | 70    | 3      | 70    | 3          | 188 | Difference      | -15         |              |      |
| 635             | 4         | 74   | 72    | 4      | 72    | 4          | 189 | Fan #1 Control  | 8           | 100%         |      |
| 596             | 5         | 75   | 73    |        |       |            |     | Fan #2 Control  | 8           | BP           |      |

AVERAGES  
L 576 R 592  
OVERALL 584

AVERAGES  
L 74 R 73

AVERAGE  
1.86

|                  |        |
|------------------|--------|
| Jacket Water IN  | 150    |
| Jacket Water OUT | 160    |
| Difference       | -10 SP |
| Fan #1 Control   | 8 100% |
| Fan #2 Control   | 8 SP   |

Engine Oil IN 141 PreTurbine EX 684 Fuel  
Engine Oil OUT 153 PostTurbine EX 507 Supply  
Turbo Lube Oil 154 Exhaust Stack 38 57

|                |     |     |
|----------------|-----|-----|
| Gas Dischrg    | IN  | 191 |
| Gas Dischrg    | CUT | 100 |
| Difference     |     | 91  |
| Fan #1 Control |     | 55  |
| Fan #2 Control |     | 55  |

!DC :INSTRAIR.PRES.  
Eng Oper Sta Misc

10/11/89  
Engine #2 Emission Test

| Time             | 5:45  | 6:15  | 6:45 | 7:15       |     |
|------------------|-------|-------|------|------------|-----|
| Engine Speed     | 329   | 330   | 359  | Cung off   |     |
| Horsepower       | 730.7 | 428.8 | 473  |            |     |
| Section          | 661   | 661   | 662  | 7:00       | R.M |
| Discharge        | 1615  | 1615  | 1617 |            |     |
| Airman Press     | 37.5  | 37.6  | 37.7 | Not needed |     |
| Relman Press     | 37    | 37    | 37   |            |     |
| Timing           | 7°    | 7°    | 7°   |            |     |
| Man Temp         | 119   | 120   | 120  |            |     |
| Eng C.1 Temp Out | 168°  | 168°  | 168° |            |     |
| W Temp Out       | 160   | 160   | 160  |            |     |

P-53

STATION 02

Engine Running and Loaded

ENGINE RUNNING STATUS

Control AUTO  
Load Step 0  
Horsepower 4301 SHp  
Engine Speed:  
    Actual 300 RPM  
    Set Point 0 %  
Engine Torque:  
    Actual 102 %  
    Set Point 100 %  
TURBOCHARGER STATUS  
Turbine Speed 12540 RPM

Air Manifold Pressure 37.6 "Hg

ENGINE 02 OPERATION DATA  
GAS FLOW

Suction Header 1  
Suction Press 660  
Discharge Header 2  
Discharge Press 1617  
----Pumping Capacity--  
Minimum(MMCFD) 62  
Maximum(MMCFD) 103  
-----Fuel Usage-----  
Pressure(PSI) 95  
Differ("H2O) 79  
Flowrate(MCFH) 33

ALM 3 16:45:33

TIOGA STORAGE

PRESSESURES (PSI)

Engine Lube Oil 47

PreOil Filter 53

PreOil Strainer 52

Turbo Oil 20

Jacket Water 12

Fuel Manifold 37

MISCELLANEOUS

IgnitionTiming 7

Exhaust Oxygen <<4 %

Turbo Bypass 42 %

!E2 :UVCGI.INHIB.  
ClearSDs Eng Temp StaYardA StaYardB Sta Mode SetPoint 0 OFF NORMAL C  
Eng Menu MainMenu

DATE- 10-12-89

Ran out of paper

6

| E-54              |   |                                  |          |                 |                          |                |          |  |  |
|-------------------|---|----------------------------------|----------|-----------------|--------------------------|----------------|----------|--|--|
| STATION 02        |   |                                  |          |                 |                          |                |          |  |  |
| CYLINDER<br>Left  | POWER<br>CYLINDERS<br>HEADS<br>Left Right | ENGINE 02 TEMPERATURE ( F ) DATA |          |                 |                          | ALM 3 16:45:48 |          |  |  |
|                   |   | FUEL                             | VALVES   | COMPRESSOR      | DISCHARGES               | TIOGA STORAGE  |          |  |  |
|                   |   | Left                             | Right    | Air Manifold    | Temperature Control Fans |                |          |  |  |
|                   |   | 1                                | 1        | After Water IN  | SP                       |                |          |  |  |
|                   |   | 2                                | 2        | After Water OUT |                          |                |          |  |  |
| CYLINDER<br>Right | POWER<br>CYLINDERS<br>HEADS<br>Left Right | Temperature Control Fans         |          |                 |                          |                |          |  |  |
|                   |   | 3                                | 3        | Difference      |                          |                |          |  |  |
|                   |   | 4                                |          | Fan #1 Control  |                          |                |          |  |  |
|                   |   |                                  |          | Fan #2 Control  | BP                       |                |          |  |  |
|                   |   |                                  |          | Jacket Water IN |                          |                |          |  |  |
| AVERAGES          |   | AVERAGES                         |          | AVERAGE         | Jacket Water OUT         |                |          |  |  |
| L                 | R   | L                                | R        | OVERALL         | Difference               |                |          |  |  |
| OVERALL           |   | OVERALL                          |          | AVERAGE         | Fan #1 Control           |                |          |  |  |
| Engine Oil IN     |   | PreTurbine EX                    |          | Fuel Supply     | Fan #2 Control           |                |          |  |  |
| Engine Oil OUT    |   | PostTurbine EX                   |          |                 | Gas Discharge IN         |                |          |  |  |
| Turbo Lube Oil    |   | Exhaust Stack                    |          |                 | Gas Discharge OUT        |                |          |  |  |
|                   |   |                                  |          |                 | Difference               |                |          |  |  |
|                   |   |                                  |          |                 | Fan #1 Control           |                |          |  |  |
|                   |   |                                  |          |                 | Fan #2 Control           |                |          |  |  |
| E2 :UVCGI,INHIB,  | Eng Oper                                  | Sta Misc                         | StaYardA | StaYardB        | Sta Mode                 | SetPoint       | 0 OFF    |  |  |
|                   |   |                                  |          |                 |                          |                | Eng Menu |  |  |
|                   |   |                                  |          |                 |                          |                | NORMAL C |  |  |
|                   |   |                                  |          |                 |                          |                | MainMenu |  |  |

DATE - 10/12/89

1748

STATION 92

## ENGINE 02 OPERATION DATA

### Engine Running and Loaded

### ENGINE RUNNING STATUS

|                     |           |
|---------------------|-----------|
| Control             | AUTO      |
| Lv : Step           | 0         |
| Horsepower          | 4.285 BHP |
| Engine Speed:       |           |
| Actual              | 331 RPM   |
| Set Point           | 0 %       |
| Engine Torque:      |           |
| Actual              | 100 %     |
| Set Point           | 100 %     |
| TURBOCHARGER STATUS |           |

Air Manifold Pressure 37.6 mm

#### GAS FLOW

|                         |        |      |
|-------------------------|--------|------|
| Suction                 | Header | 1    |
| Suction                 | Press  | 663  |
| Dischrg                 | Header | 2    |
| Dischrg                 | Press  | 1615 |
| <b>Pumping Capacity</b> |        |      |
| Minimum(MMCFD)          |        | 61   |
| Maximum(MMCFD)          |        | 101  |
| <b>Fuel Usage</b>       |        |      |
| Pressure(PSI)           |        | 96   |
| Differ("H2O")           |        | 78   |
| Flowrate(MCFH)          |        | 33   |

## TIOGA STORAGE

PRESSURES (PSI)

|                        |    |
|------------------------|----|
| Engine Lubricating Oil | 47 |
| PreOil Filter          | 53 |
| PreOil Strainer        | 52 |
| Turbo Oil              | 20 |
| Jacket Water           | 12 |
| Fuel Manifold          | 37 |

MISCELLANEOUS

Ignition Timing 7

### Exhaust Oxygen <<< 7

Turbo Bypass 40%

E2 : UVCGI.INHIB.  
learSDs Eng Temp StaYardA StaYardB Sta Mode SetPoint @ OFF Eng Menu NORMAL C  
MainMenu

10-12-89  
16:15 PM

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STATION 02

## ENGINE 02 TEMPERATURE ( F ) DATA

| POWER CYLINDERS |       | FUEL VALVES |       | COMPRESSOR DISCHARGES |       | TIORA STORAGE |              |
|-----------------|-------|-------------|-------|-----------------------|-------|---------------|--------------|
| CYLINDER        | HEADS | Left        | Right | Left                  | Right | Temperature   | Control Fans |
| 1               | 624   | 1           | 569   | 1                     | 91    | 1             | 94           |
| 2               | 635   | 2           | 550   | 2                     | 89    | 2             | 89           |
| 3               | 593   | 3           | 587   | 3                     | 85    | 3             | 88           |
| 4               | 589   | 4           | 657   | 4                     | 88    | 4             | 88           |
| 5               | 613   | 5           | 609   | 5                     | 91    | 5             | 89           |

| Left | Right | Left | Right | 1 | 200 | Air Manifold | 120 | 120 |
|------|-------|------|-------|---|-----|--------------|-----|-----|
| 1    | 624   | 1    | 569   | 1 | 91  | 1            | 94  |     |
| 2    | 635   | 2    | 550   | 2 | 89  | 2            | 89  |     |
| 3    | 593   | 3    | 587   | 3 | 85  | 3            | 88  |     |
| 4    | 589   | 4    | 657   | 4 | 88  | 4            | 88  |     |
| 5    | 613   | 5    | 609   | 5 | 91  | 5            | 89  |     |

| AVERAGES |     | AVERAGES |     | AVERAGE |    | Jacket Water | IN | 153 |            |     |     |
|----------|-----|----------|-----|---------|----|--------------|----|-----|------------|-----|-----|
| L        | 610 | R        | 614 | L       | 88 | R            | 89 | 194 | OUT        | 159 | 160 |
| OVERALL  | 612 |          |     | OVERALL | 88 |              |    |     | Difference | -6  | SP  |

| Engine Oil IN  | 156 | PreTurbine EX     | 719 | Fuel Supply | Gas Dischrg | IN  | 195 |     |
|----------------|-----|-------------------|-----|-------------|-------------|-----|-----|-----|
| Engine Oil OUT | 168 | PostTurbine EX<<< |     | 70          | Gas Dischrg | OUT | 169 | 100 |
| Turbo Lube Oil | 166 | Exhaust Stack     | 39  |             | Difference  |     | 86  | SP  |

| Fan #1 Control | 30 | 100% | Fan #2 Control | 30 | SP |
|----------------|----|------|----------------|----|----|
|----------------|----|------|----------------|----|----|

| Fan #1 Control | 30 | 100% | Fan #2 Control | 30 | SP |
|----------------|----|------|----------------|----|----|
|----------------|----|------|----------------|----|----|

| 0 OFF | NORMAL C | MainMenu |
|-------|----------|----------|
|-------|----------|----------|

| Eng Menu |
|----------|
|----------|

| SetPoint |
|----------|
|----------|

| Sta Mode |
|----------|
|----------|

| Sta YاردA |
|-----------|
|-----------|

| Sta YاردB |
|-----------|
|-----------|

| Sta Misc |
|----------|
|----------|

| Eng Oper |
|----------|
|----------|

| E2 :UVC61.INHIB. |
|------------------|
|------------------|

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10-12-89

STATION 02

ENGINE 02 OPERATION DATA  
GAS FLOW

Engine Running and Loaded

ENGINE RUNNING STATUS

Control AUTO  
Load Step 0  
Horsepower 4284 BHP  
Engine Speed:  
    Actual 330 RPM  
    Set Point 0 %  
Engine Torque:  
    Actual 103 %  
    Set Point 100 %  
TURBOCHARGER STATUS  
Turbine Speed 12556 RPM

Air Manifold Pressure 37.7 "Hg

Suction Header 1  
Suction Press 665  
Discharge Header 2  
Discharge Press 1615  
----Pumping Capacity---  
Minimum(MMCFD) 61  
Maximum(MMCFD) 102  
-----Fuel Usage-----  
Pressure(PSI) 96  
Differ("H2O) 73  
Flowrate(MCFH) 32

ALM 3 15:49:53

TIoga Storage

PRESSURES (PSI)

Engine Lube Oil 47

PreOil Filter 53

PreOil Strainer 52

Turbo Oil 20

Jacket Water 12

Fuel Manifold 37

MISCELLANEOUS

IgnitionTiming 7

Exhaust Oxygen <<< %

Turbo Bypass 40 %

0 OFF      NORMAL C  
Eng Menu    MainMenu

E2 :UVCGLINHIS.  
learSDs Eng Temp StaYardA StaYardB Sta Mode SetPoint

| STATION 02         |       | ENGINE 02 TEMPERATURE ( F ) |        |            |       |                |         | ALM 3 15:50:34 |     |                        |
|--------------------|-------|-----------------------------|--------|------------|-------|----------------|---------|----------------|-----|------------------------|
|                    |       | POWER CYLINDERS             |        | COMPRESSOR |       | TIOGA STORAGE  |         |                |     |                        |
| CYLINDER           | HEADS | FUEL                        | VALVES | DISCHARGES |       | Temperature    | Control | Fans           |     |                        |
| Left               | Right | Left                        | Right  | Left       | Right | Air Manifold   | 120     | 120            |     |                        |
| 1                  | 625   | 1                           | 671    | 1          | 91    | 1              | 95      | 1              | 199 | SP                     |
| 2                  | 636   | 2                           | 649    | 2          | 89    | 2              | 89      | 2              | 190 |                        |
| 3                  | 595   | 3                           | 585    | 3          | 85    | 3              | 88      | 3              | 192 | -22                    |
| 4                  | 591   | 4                           | 657    | 4          | 88    | 4              | 89      | 4              | 193 | Fan #1 Control 19 100% |
| 5                  | 614   | 5                           | 612    | 5          | 91    | 5              | 89      |                |     | Fan #2 Control 19 BP   |
| AVERAGES           |       | AVERAGES                    |        | AVERAGE    |       | Jacket Water   | IN      | 184            |     |                        |
| L 612              | R 614 | L 88                        | R 90   |            | 193   | Jacket Water   | OUT     | 160            | 160 |                        |
| OVERALL 613        |       | OVERALL 89                  |        |            |       | Difference     |         | -6             | SP  |                        |
| Engine Oil IN 156  |       | PreTurbine EX 721           |        | Fuel       |       | Gas Dischrg    | IN      | 195            |     |                        |
| Engine Oil OUT 169 |       | PostTurbine EX<<<           |        | Supply     |       | Gas Dischrg    | OUT     | 110            | 100 |                        |
| Turbo Lube Oil 167 |       | Exhaust Stack 40            |        | 71         |       | Difference     |         | 85             | SP  |                        |
|                    |       |                             |        |            |       | Fan #1 Control |         | MAX            |     |                        |
|                    |       |                             |        |            |       | Fan #2 Control |         | MAX            |     |                        |

| EE2 :UVCGI.INHIB. | Eng Oper | Sta Misc | StaYardA | StaYardB | Sta Mode | SetPoint | 0 OFF    | NORMAL C |
|-------------------|----------|----------|----------|----------|----------|----------|----------|----------|
|                   |          |          |          |          |          |          | Eng Menu | MainMenu |

10-12-89

## TATION 02

ENGINE 02 OPERATION DATA  
GAS FLOW

Engine Running and Loaded

## ENGINE RUNNING STATUS

|                     |           |
|---------------------|-----------|
| Control             | AUTO      |
| Load Step           | 0         |
| Horsepower          | 4230 BHP  |
| Engine Speed:       |           |
| Actual              | 330 RPM   |
| Set Point           | 0 %       |
| Engine Torque:      |           |
| Actual              | 101 %     |
| Set Point           | 100 %     |
| TURBOCHARGER STATUS |           |
| Turbine Speed       | 12546 RPM |

Air Manifold Pressure 37.3 "Hg

|                          |      |
|--------------------------|------|
| Suction Header           | 1    |
| Suction Press            | 663  |
| Deschrg Header           | 2    |
| Deschrg Press            | 1615 |
| ----Pumping Capacity---- |      |
| Minimum(MMCFD)           | 61   |
| Maximum(MMCFD)           | 102  |
| -----Fuel Usage-----     |      |
| Pressure(PSI)            | 96   |
| Differ("H2O)             | 77   |
| Flowrate(MCFH)           | 33   |

|                 |          |
|-----------------|----------|
| ALM 3           | 15:14:54 |
| TIOGA STORAGE   |          |
| PRESSURES (PSI) |          |
| Engine Lube Oil | 47       |
| PreOil Filter   | 53       |
| PreOil Strainer | 52       |
| Turbo Oil       | 20       |
| Jacket Water    | 12       |
| Fuel Manifold   | 37       |
| MISCELLANEOUS   |          |
| IgnitionTiming  | 7        |
| Exhaust Oxygen  | <<< %    |
| Turbo Bypass    | 39 %     |

.ELA :#00TIME.ERROR.

|          |          |          |          |          |          |          |          |
|----------|----------|----------|----------|----------|----------|----------|----------|
| ClearSDs | Eng Temp | StaYardA | StaYardB | Sta Mode | SetPoint | 1 ON     | ALARM C  |
|          |          |          |          |          |          | Eng Menu | MainMenu |

F-60

TATION 02

ENGINE 02 TEMPERATURE ( F ) DATA ALM E 15:15:24

POWER CYLINDERS TIoga Storage

| CYLINDER | HEADS | FUEL | VALVES | COMPRESSOR | DISCHARGES | DATA         | Temperature | Control        | Fans    |
|----------|-------|------|--------|------------|------------|--------------|-------------|----------------|---------|
| Left     | Right | Left | Right  |            |            | Air Manifold | 120         | 120            |         |
| 1        | 524   | 1    | 570    | 1          | 89         | 1            | 92          | IN             | 118 SP  |
| 2        | 635   | 2    | 649    | 2          | 88         | 2            | 88          | OUT            | 141     |
| 3        | 595   | 3    | 586    | 3          | 85         | 3            | 86          | Difference     | -23     |
| 4        | 589   | 4    | 555    | 4          | 84         | 4            | 87          | Fan #1 Control | 18 100% |
| 5        | 613   | 5    | 611    | 5          | 89         | 5            | 88          | Fan #2 Control | 18 BP   |

AVERAGES

L 611 R 614  
OVERALL 612

AVERAGES

L 87 R 88  
OVERALL 87

AVERAGE

193

|                |     |         |
|----------------|-----|---------|
| Jacket Water   | IN  | 154     |
| Jacket Water   | OUT | 159     |
| Difference     |     | -5 SP   |
| Fan #1 Control |     | 34 100% |
| Fan #2 Control |     | 34 BP   |

Engine Oil IN 156

Engine Oil OUT 168

Turbo Lube Oil 165

PreTurbine EX 719

PostTurbine EX&lt;&lt;&lt;

Exhaust Stack 37

Fuel

Supply

69

|                |     |       |
|----------------|-----|-------|
| Gas Dischrgae  | IN  | 195   |
| Gas Dischrgae  | OUT | 109   |
| Difference     |     | 86 SP |
| Fan #1 Control |     | MAX   |
| Fan #2 Control |     | MAX   |

EIA :#OCTIME.ERROR.

Eng Oper Sta Misc StaYardA StaYardB Sta Mode SetPoint 1 ON ALARM C  
MainMenu Eng Menu

10-12-89

TATION 02

ENGINE 02 OPERATION DATA  
GAS FLOW

Engine Running and Loaded

## ENGINE RUNNING STATUS

|                                |           |
|--------------------------------|-----------|
| Control                        | AUTO      |
| Load Step                      | 0         |
| Horsepower                     | 4324 BHP  |
| Engine Speed:                  |           |
| Actual                         | 330 RPM   |
| Set Point                      | 0 %       |
| Engine Torque:                 |           |
| Actual                         | 100 %     |
| Set Point                      | 100 %     |
| TURBOCHARGER STATUS            |           |
| Turbine Speed                  | 12508 RPM |
| Air Manifold Pressure 37.1 "Hg |           |

ALM 3 15:15:09  
 TIoga Storage  
 Pressures (PSI)  
 Engine Lube Oil 47  
 PreOil Filter 53  
 PreOil Strainer 52  
 Turbo Oil 29  
 Jacket Water 12  
 Fuel Manifold 37  
 MISCELLANEOUS  
 IgnitionTiming 7  
 Exhaust Oxygen 0.00 %  
 Turbo Bypass 39 %

 1 ON ALARM C  
 Eng Menu MainMenu

E1A : #OCTIME.ERROR.

ClearSDs Eng Temp

StaYardA

StaYardB

Sta Mode

SetPoint

F-62

| TATION 02          |                   | ENGINE 02       |       | TEMPERATURE ( F ) |            | DATA            |                   | ALM 3 15:15:43  |         | TIoga Storage |  |
|--------------------|-------------------|-----------------|-------|-------------------|------------|-----------------|-------------------|-----------------|---------|---------------|--|
| CYLINDER           | HEADS             | POWER CYLINDERS | FUEL  | VALVES            | COMPRESSOR | DISCHARGES      |                   | Temperature     | Control | Fans          |  |
| Left               | Right             | Left            | Right | Left              | Right      | Left            |                   | Air Manifold    | 120     | 120           |  |
| 1                  | 624               | 1               | 569   | 1                 | 89         | 1               | 94                | After Water IN  | 118     | SP            |  |
| 2                  | 635               | 2               | 649   | 2                 | 89         | 2               | 87                | After Water OUT | 141     |               |  |
| 3                  | 595               | 3               | 588   | 3                 | 83         | 3               | 86                | Difference      | -23     |               |  |
| 4                  | 590               | 4               | 655   | 4                 | 86         | 4               | 87                | Fan #1 Control  | 18      | 100%          |  |
| 5                  | 613               | 5               | 611   | 5                 | 89         | 5               | 87                | Fan #2 Control  | 18      | BP            |  |
| AVERAGES           |                   | AVERAGES        |       | AVERAGE           |            | Jacket Water IN |                   | 153             |         |               |  |
| L 611              | R 614             | L 87            | R 68  |                   |            |                 | Jacket Water OUT  | 160             | 160     |               |  |
| OVERALL 612        |                   | OVERALL 87      |       |                   |            |                 | Difference        | -7              | SP      |               |  |
| Engine Oil IN 156  | PreTurbine EX 720 | Fuel            |       |                   |            |                 | Fan #1 Control    | 34              | 100%    |               |  |
| Engine Oil OUT 158 | PostTurbine EX<<< | Supply          |       |                   |            |                 | Fan #2 Control    | 34              | BP      |               |  |
| Turbo Lube Oil 155 | Exhaust Stack 37  | 37              | 59    |                   |            |                 | Gas Discharge IN  | 195             |         |               |  |
|                    |                   |                 |       |                   |            |                 | Gas Discharge OUT | 109             | 100     |               |  |
|                    |                   |                 |       |                   |            |                 | Difference        | 86              | SP      |               |  |
|                    |                   |                 |       |                   |            |                 | Fan #1 Control    | MAX             |         |               |  |
|                    |                   |                 |       |                   |            |                 | Fan #2 Control    | MAX             |         |               |  |

EIA :#OCTIME.ERROR.  
 Eng Oper Sta Misc StaYardA StaYardB Sta Mode SetPoint 1 ON ALARM C  
 Eng Menu MainMenu

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/0-12-89

|                                |                          |                      |          |          |          |          |          |
|--------------------------------|--------------------------|----------------------|----------|----------|----------|----------|----------|
| STATION 02                     | ENGINE 02 OPERATION DATA | ALM 3 14:48:12       |          |          |          |          |          |
| GAS FLOW                       |                          | TIDGA STORAGE        |          |          |          |          |          |
| Engine Running and Loaded      |                          | PRESSESSES (PSI)     |          |          |          |          |          |
|                                |                          | Engine Lube Oil 47   |          |          |          |          |          |
| ENGINE RUNNING STATUS          |                          | PreOil Filter 53     |          |          |          |          |          |
| Control                        | AUTO                     | PreOil Strainer 52   |          |          |          |          |          |
| Load Step                      | 0                        | Turbo Oil 29         |          |          |          |          |          |
| Horsepower                     | 4206 BHp                 | Jacket Water 12      |          |          |          |          |          |
| Engine Speed:                  |                          | Fuel Manifold 37     |          |          |          |          |          |
| Actual                         | 330 RPM                  | MISCELLANEOUS        |          |          |          |          |          |
| Set Point                      | 0 %                      | IgnitionTiming ?     |          |          |          |          |          |
| Engine Torque:                 |                          | Exhaust Oxygen <<< % |          |          |          |          |          |
| Actual                         | 103 %                    | Turbo Bypass 37 %    |          |          |          |          |          |
| Set Point                      | 100 %                    |                      |          |          |          |          |          |
| TURBOCHARGER STATUS            |                          |                      |          |          |          |          |          |
| Turbine Speed                  | 12556 RPM                |                      |          |          |          |          |          |
| Air Manifold Pressure 37.6 "Hg |                          |                      |          |          |          |          |          |
|                                |                          |                      |          |          |          |          |          |
| E1A :#OCTIME.ERROR.            |                          |                      |          |          |          |          |          |
| clearSDs                       | Eng Temp                 | StaYarda             | StaYardB | Sta Mode | SetPoint | 1 ON     | ALARM C  |
|                                |                          |                      |          |          |          | Eng Menu | MainMenu |

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| STATION 02                       |       |                   |       |                       |       |                |     |              |     | ALM 3          | 14:48:57 |         |
|----------------------------------|-------|-------------------|-------|-----------------------|-------|----------------|-----|--------------|-----|----------------|----------|---------|
| ENGINE 02 TEMPERATURE ( F ) DATA |       |                   |       |                       |       |                |     |              |     | TIOGA STORAGE  |          |         |
| POWER CYLINDERS                  |       | FUEL VALVES       |       | COMPRESSOR DISCHARGES |       | Temperature    |     | Control Fans |     |                |          |         |
| CYLINDER                         | HEADS | Left              | Right | Left                  | Right | Air Manifold   | IN  | 120          | 120 |                |          |         |
| 1                                | 624   | 1                 | 569   | 1                     | 89    | 1              | 94  | 1            | 199 | After Water    | OUT      | 117 SP  |
| 2                                | 632   | 2                 | 647   | 2                     | 89    | 2              | 87  | 2            | 192 | Difference     |          | -24     |
| 3                                | 592   | 3                 | 586   | 3                     | 85    | 3              | 86  | 3            | 192 | Fan #1 Control |          | 16 100% |
| 4                                | 589   | 4                 | 654   | 4                     | 86    | 4              | 87  | 4            | 192 | Fan #2 Control |          | 16 SP   |
| 5                                | 611   | 5                 | 609   | 5                     | 89    | 5              | 87  |              |     | Jacket Water   | IN       | 152     |
| AVERAGES                         |       | AVERAGES          |       | AVERAGE               |       | Jacket Water   |     | 160          |     |                |          |         |
| L 609                            | R 613 | L 87              | R 88  | OVERALL               | 87    | 193            | OUT | 160          | 160 | Difference     |          | SP      |
| OVERALL 611                      |       | OVERALL 87        |       |                       |       | Fan #1 Control |     | 36 100%      |     |                |          |         |
|                                  |       |                   |       |                       |       | Fan #2 Control |     | 36 SP        |     |                |          |         |
| Engine Oil IN                    | 154   | PreTurbine EX     | 719   | Fuel                  |       | Gas Discharge  |     | 195          |     |                |          |         |
| Engine Oil OUT                   | 158   | PostTurbine EX<<< |       | Supply                |       | Gas Discharge  |     | 108          |     |                |          |         |
| Turbo Lube Oil                   | 156   | Exhaust Stack     | 36    | 68                    |       | Difference     |     | 87 SP        |     |                |          |         |
|                                  |       |                   |       |                       |       | Fan #1 Control |     | MAX          |     |                |          |         |
|                                  |       |                   |       |                       |       | Fan #2 Control |     | MAX          |     |                |          |         |

EIA :#OCTIME.ERROR.  
 Eng Oper Sta Misc StaYardA StaYardB Sta Mode SetPoint 1 ON ALARM C  
 Eng Menu MainMenu

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J 0 - 12 - 89

|                                |                          |                            |                      |  |
|--------------------------------|--------------------------|----------------------------|----------------------|--|
| STATION 02                     | ENGINE 02 OPERATION DATA |                            | ALM 3 14:48:33       |  |
|                                | GAS FLOW                 |                            | TIOSA STORAGE        |  |
| Engine Running and Loaded      |                          |                            | PRESSES (PSI)        |  |
|                                |                          |                            | Engine Lube Oil 47   |  |
| ENGINE RUNNING STATUS          |                          |                            | PreOil Filter 53     |  |
| Control                        | AUTO                     | Suction Header 1           | PreOil Strainer 52   |  |
| Load Step                      | 0                        | Suction Press 662          | Turbo Oil 20         |  |
| Horsepower                     | 4195 BHp                 | Discharge Header 2         | Jacket Water 12      |  |
| Engine Speed:                  |                          | Discharge Press 1615       | Fuel Manifold 37     |  |
| Actual                         | 330 RPM                  | -----Pumping Capacity----- | MISCELLANEOUS        |  |
| Set Point                      | 0 %                      | Minimum(MMCFD) 61          | Ignition Timing 7    |  |
| Engine Torque:                 |                          | Maximum(MMCFD) 101         | Exhaust Oxygen 100 % |  |
| Actual                         | 101 %                    | -----Fuel Usage-----       |                      |  |
| Set Point                      | 100 %                    | Pressure(PSI) 96           |                      |  |
| TURBOCHARGER STATUS            |                          |                            | Differ("H2O) 74      |  |
| Turbine Speed                  | 12551 RPM                | Flowrate(MCFH) 32          | Turbo Bypass 38 %    |  |
| Air Manifold Pressure 37.6 "Hg |                          |                            |                      |  |

E1A : NOCTIME.ERROR.

|          |          |          |          |          |          |          |          |
|----------|----------|----------|----------|----------|----------|----------|----------|
| ClearSDs | Eng Temp | StaYardA | StaYardB | Sta Mode | SetPoint | 1 ON     | ALARM C  |
|          |          |          |          |          |          | Eng Menu | MainMenu |

ALM 3 14:49:15

| STATION 02         |       | ENGINE 02         |       | TEMPERATURE ( F ) |        | DATA           |              | TIOGA STORAGE |     |
|--------------------|-------|-------------------|-------|-------------------|--------|----------------|--------------|---------------|-----|
| CYLINDER           | HEADS | POWER CYLINDERS   |       | COMPRESSOR        |        | Temperature    | Control Fans | 120           | 120 |
|                    |       | Left              | Right | FUEL              | VALVES |                |              |               |     |
| 1                  | 624   | 1                 | 569   | 1                 | 89     | 1              | 94           | 1             | 199 |
| 2                  | 632   | 2                 | 647   | 2                 | 88     | 2              | 88           | 2             | 192 |
| 3                  | 592   | 3                 | 588   | 3                 | 85     | 3              | 86           | 3             | 192 |
| 4                  | 589   | 4                 | 653   | 4                 | 86     | 4              | 85           | 4             | 192 |
| 5                  | 611   | 5                 | 610   | 5                 | 89     | 5              | 88           |               |     |
| AVERAGES           |       | AVERAGES          |       | AVERAGE           |        | Jacket Water   |              | 152           |     |
| L 609              | R 613 | L 87              | R 88  |                   |        | AVERAGE        | IN           | 160           | 160 |
| OVERALL 611        |       | OVERALL 87        |       | 193               |        | Difference     | -8           | SP            |     |
| Engine Oil IN 154  |       | PreTurbine EX 719 |       | Fuel              |        | Gas Dischrg    | IN           | 195           |     |
| Engine Oil OUT 168 |       | PostTurbine EX<<< |       | Supply            |        | Gas Dischrg    | OUT          | 109           | 100 |
| Turbo Lube Oil 166 |       | Exhaust Stack 36  |       | 48                |        | Difference     | 86           | SP            |     |
|                    |       |                   |       |                   |        | Fan #1 Control | MAX          |               |     |
|                    |       |                   |       |                   |        | Fan #2 Control | MAX          |               |     |

!E1A :#00CTIME.ERROR.

ng Oper Sta Misc StaYardA StaYardB Sta Mode SetPoint 1 ON ALARM C

Eng Menu MainMenu

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/0-12-89 ALM 3 14:12:06

TIOGA STORAGE

PRESSURES (PSI)

Engine Lube Oil 46

## STATION 02

## ENGINE 02 OPERATION DATA

## GAS FLOW

Engine Running and Loaded

Suction Header 1

Suction Press 661

Discharge Header 2

Discharge Press 1614

---Pumping Capacity---

Minimum(MMCFD) 60

Maximum(MMCFD) 101

-----Fuel Usage-----

Pressure(PSI) 96

Differ("H2O) 77

Flowrate(MCFH) 33

PreOil Filter 53

PreOil Strainer 52

Turbo Oil 20

Jacket Water 12

Fuel Manifold 37

MISCELLANEOUS

IgnitionTiming 7

Exhaust Oxygen&lt;&lt;&lt; %

Turbo Bypass 35 %

ENGINE RUNNING STATUS

AUTO

Control Load Step 0

Horsepower 4285 Bhp

Engine Speed: Actual 332 RPM

Set Point 0 %

Engine Torque: Actual 100 %

Set Point 100 %

TURBOCHARGER STATUS

Turbine Speed 12530 RPM

Air Manifold Pressure 37.5 "Hg

CLEAR : #OCTIME, ERROR,

ClearSDs Eng Temp StaYardA StaYardB Sta Mode SetPoint Eng Menu MainMenu

1 ON ALARM 0

10-12-89

| TATION 82          |                   | ENGINE 82       |      | TEMPERATURE ( F ) |            | DATA       |                   | ALM 3 14:14:12 |         | TIOGA STORAGE |  |
|--------------------|-------------------|-----------------|------|-------------------|------------|------------|-------------------|----------------|---------|---------------|--|
| CYLINDER           | HEADS             | POWER CYLINDERS | FUEL | VALVES            | COMPRESSOR | DISCHARGES |                   | Temperature    | Control | Fans          |  |
| Left               | Right             |                 | Left | Right             |            |            | Air Manifold      | 120            | 120     |               |  |
| 1 624              | 1 569             | 1               | 87   | 1 92              | 1          | 199        | After Water IN    | 116            | SP      |               |  |
| 2 633              | 2 649             | 2               | 86   | 2 66              | 2          | 192        | After Water OUT   | 141            |         |               |  |
| 3 592              | 3 583             | 3               | 82   | 3 85              | 3          | 192        | Difference        | -25            |         |               |  |
| 4 588              | 4 653             | 4               | 85   | 4 85              | 4          | 192        | Fan #1 Control    | 19             | 100%    |               |  |
| 5 611              | 5 609             | 5               | 87   | 5 86              |            |            | Fan #2 Control    | 19             | BP      |               |  |
| AVERAGES           |                   | AVERAGES        |      | AVERAGE           |            |            | Jacket Water IN   | 154            |         |               |  |
| L 609              | R 612             | L 85            | R 86 |                   | 193        |            | Jacket Water OUT  | 161            | 160     |               |  |
| OVERALL 610        |                   | OVERALL 85      |      |                   |            |            | Difference        | -7             | SP      |               |  |
| Engine Oil IN 154  | PreTurbine EX 717 | Fuel            |      |                   |            |            | Fan #1 Control    | 37             | 100%    |               |  |
| Engine Oil OUT 168 | PostTurbine EX<<< | Supply          |      |                   |            |            | Fan #2 Control    | 37             | BP      |               |  |
| Turbo Lube Oil 165 | Exhaust Stack 34  | 86              |      |                   |            |            | Gas Dischrgre IN  | 195            |         |               |  |
|                    |                   |                 |      |                   |            |            | Gas Dischrgre OUT | 109            | 130     |               |  |
|                    |                   |                 |      |                   |            |            | Difference        | 86             | SP      |               |  |
|                    |                   |                 |      |                   |            |            | Fan #1 Control    | MAX            |         |               |  |
|                    |                   |                 |      |                   |            |            | Fan #2 Control    | MAX            |         |               |  |

11A :#OCTIME.ERROR.  
 Eng Oper Sta Misc StaYardA StaYardB Sta Mode SetPoint 1 ON ALARM C  
 Eng Menu MainMenu

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## TATION 02

ENGINE 02 OPERATION DATA  
GAS FLOW

|                |                     |
|----------------|---------------------|
|                | ALM 3 14:12:52      |
|                | TIOGA STORAGE       |
|                | PRESSURES (PSI)     |
|                | Engine Lube Oil 47  |
| Control        | PreOil Filter 53    |
| Load Step      | PreOil Strainer 52  |
| Horsepower     | Turbo Oil 20        |
| Engine Speed:  | Jacket Water 12     |
| Actual         | Fuel Manifold 37    |
| Set Point      | MISCELLANEOUS       |
| Engine Torque: | IgnitionTiming 7    |
| Actual         | Exhaust Oxygen<<< 6 |
| Set Point      | Turbo Bypass 35 %   |

Engine Running and Loaded

## ENGINE RUNNING STATUS

|                |          |
|----------------|----------|
| Control        | AUTO     |
| Load Step      | 0        |
| Horsepower     | 4265 BHp |
| Engine Speed:  | 330 RPM  |
| Actual         | 330 RPM  |
| Set Point      | 0 %      |
| Engine Torque: | 100 %    |
| Actual         | 100 %    |
| Set Point      | 100 %    |

|                       |           |
|-----------------------|-----------|
| TURBOCHARGER STATUS   |           |
| Turbine Speed         | 12530 RPM |
| Air Manifold Pressure | 37.5 Hg   |

E1A :#OCTIME.ERROR.

clearSDs Eng Temp StaYardA StaYardB Sta Mode SetPoint 1 ON ALARM C  
Eng Menu MainMenu

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ALM 3 14:13:32  
TIoga Storage

| TATION 02          |                 | ENGINE 02 TEMPERATURE ( F ) DATA |        |                           |                       | TIOGA STORAGE    |         |      |
|--------------------|-----------------|----------------------------------|--------|---------------------------|-----------------------|------------------|---------|------|
| CYLINDER           | POWER CYLINDERS | HEADS                            | FUEL   | VALVES                    | COMPRESSOR DISCHARGES | Temperature      | Control | Fans |
| Left               | Right           | Left                             | Right  |                           |                       | Air Manifold     | 120     | 120  |
| 1                  | 622             | 1                                | 569    | 1                         | 87 1 92               | After Water IN   | 117     | SP   |
| 2                  | 633             | 2                                | 648    | 2                         | 86 2 86               | After Water OUT  | 141     |      |
| 3                  | 592             | 3                                | 586    | 3                         | 82 3 85               | Difference       | -24     |      |
| 4                  | 588             | 4                                | 654    | 4                         | 85 4 85               | Fan #1 Control   | 19      | 100% |
| 5                  | 610             | 5                                | 607    | 5                         | 87 5 86               | Fan #2 Control   | 19      | BP   |
| AVERAGES           |                 | AVERAGES                         |        | AVERAGE                   |                       | Jacket Water IN  | 154     |      |
| L 629              | R 612           | L 85                             | R 86   |                           | 193                   | Jacket Water OUT | 161     | 160  |
| OVERALL 610        |                 | OVERALL 85                       |        |                           |                       | Difference       | -7      | SP   |
| Engine Oil IN 154  |                 | PreTurbine EX 716                | Fuel   | Gas Dischrgre IN 195      |                       |                  |         |      |
| Engine Oil OUT 163 |                 | PostTurbine EX<<<                | Supply | Gas Dischrgre OUT 129 100 |                       |                  |         |      |
| Turbo Lube Oil 165 |                 | Exhaust Stack 34                 | 66     | Difference 36 SP          |                       |                  |         |      |
|                    |                 |                                  |        | Fan #1 Control MAX        |                       |                  |         |      |
|                    |                 |                                  |        | Fan #2 Control MAX        |                       |                  |         |      |

E1A :#OCTIME.ERROR.  
 Eng Oper Sta Misc StaYardA StaYardB Sta Mode SetPoint 1 ON ALARM C  
 Eng Menu MainMenu

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## STATION 02

ENGINE 02 OPERATION DATA  
GAS FLOW

Engine Running and Loaded

## ENGINE RUNNING STATUS

Control AUTO

Load Step 0

Horsepower

Engine Speed:

Actual

Set Point

Engine Torque:

Actual

Set Point

## TURBOCHARGER STATUS

Turbine Speed 12487 RPM

Air Manifold Pressure 37.2 "Hg

Suction Header 1  
 Suction Press 660  
 Dschrge Header 2  
 Dschrge Press 1613  
 ---Pumping Capacity---  
 Minimum(MMCFD) 59  
 Maximum(MMCFD) 99  
 -----Fuel Usage-----  
 Pressure(PSI) 95  
 Differ("H2O) 74  
 Flowrate(MCFH) 33

ALM 3 13:46:07

TIOGA STORAGE

PRESSURES (PSI)

Engine Lube Oil 46

PreOil Filter 53

PreOil Strainer 52

Turbo Oil 20

Jacket Water 12

Fuel Manifold 36

## MISCELLANEOUS

IgnitionTiming 7

Exhaust Oxygen&lt;&lt; %

Turbo Bypass 35 %

32A : PCYLLAVG TEMP.

GearSDs Eng Temp StaYardA StaYardB Sta Mode SetPoint 6.0009E+02 DEG-F HIALRM C Eng Menu MainMenu

C

10 - 12 - 89

| STATION 02         |                   |                 |                 |                             |      |                        |    |                          |     | ALM 3          | 13:46:52 | TIoga Storage |
|--------------------|-------------------|-----------------|-----------------|-----------------------------|------|------------------------|----|--------------------------|-----|----------------|----------|---------------|
|                    |                   | POWER CYLINDERS |                 | ENGINE 02 TEMPERATURE ( F ) |      | COMPRESSOR DATA        |    | Temperature Control Fans |     |                |          |               |
| CYLINDER<br>Left   | HEADS<br>Right    | FUEL<br>Left    | VALVES<br>Right | DISCHARGES                  |      | Air Manifold           | IN | 121                      | 120 |                |          |               |
| 1                  | 322               | 1               | 569             | 1                           | 88   | 1                      | 89 | 1                        | 201 | After Water    | OUT      | 142           |
| 2                  | 631               | 2               | 644             | 2                           | 85   | 2                      | 87 | 2                        | 194 | Difference     |          | -23           |
| 3                  | 591               | 3               | 584             | 3                           | 83   | 3                      | 83 | 3                        | 192 | Fan #1 Control |          | 20            |
| 4                  | 586               | 4               | 657             | 4                           | 83   | 4                      | 85 | 4                        | 190 | Fan #2 Control |          | 100%          |
| 5                  | 609               | 5               | 610             | 5                           | 86   | 5                      | 87 |                          |     |                |          | BP            |
| <b>AVERAGES</b>    |                   | <b>AVEFAGES</b> |                 | <b>AVERAGE</b>              |      | <b>Jacket Water IN</b> |    | 153                      |     |                |          |               |
| L 627              | R 612             | L 65            | R 66            | L 65                        | R 66 | AVERAGE                |    | Jacket Water OUT         | 160 | 160            |          |               |
| OVERALL 609        |                   | OVERALL 65      |                 | OVERALL 65                  |      |                        |    | Difference               | -7  | SP             |          |               |
| Engine Oil IN 153  | PreTurbine EX 719 | Fuel            |                 | Gas Dischrgre IN            | 195  |                        |    |                          |     |                |          |               |
| Engine Oil OUT 166 | PostTurbine EX<<< | Supply          |                 | Gas Dischrgre OUT           | 108  | 100                    |    |                          |     |                |          |               |
| Turbo Lube Oil 166 | Exhaust Stack 34  | 68              |                 | Difference                  | 87   | SP                     |    |                          |     |                |          |               |
|                    |                   |                 |                 | Fan #1 Control              | MAX  |                        |    |                          |     |                |          |               |
|                    |                   |                 |                 | Fan #2 Control              | MAX  |                        |    |                          |     |                |          |               |

E2A : PCYLLAVG.TEMP.  
 Eng Oper Sta Misc StaYardA StaYardB Sta Mode 6.0009E+02 DEG-F EIALRM C  
 SetPoint Eng Menu MainMenu

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OPERATION DATA 70-12-89 PRESSURES (PSI)

|                           |           |                            |                 |                 |       |
|---------------------------|-----------|----------------------------|-----------------|-----------------|-------|
| Engine Running and Loaded |           | 1346                       | Engine Lube Oil | 46              |       |
| ENGINE RUNNING STATUS     | AUTO      | Suction Header             | 1               |                 |       |
| Control                   |           | Suction Press              | 659             | PreOil Filter   | 53    |
| Load Step                 | 0         | Deschrgre Header           | 2               | PreOil Strainer | 52    |
| Hrs/sepower               | 4240 BHp  | Deschrgre Press            | 1614            | Turbo Oil       | 20    |
| Engine Speed:             |           | -----Pumping Capacity----- |                 | Jacket Water    | 12    |
| Actual                    | 330 RPM   | Minimum(MMCFD)             | 60              | Fuel Manifold   | 36    |
| Set Point                 | 0 %       | Maximum(MMCFD)             | 100             | MISCELLANEOUS   |       |
| Engine Torque:            |           | -----Fuel Usage-----       |                 | IgnitionTiming  | ?     |
| Actual                    | 98 %      | Pressure(PSI)              | 96              | Exhaust Oxygen  | <<< % |
| Set Point                 | 100 %     | Differ("H2O)               | 77              | Turbo Bypass    | 35 %  |
| TURBOCHARGER STATUS       |           | Flowrate(MCFH)             | 33              |                 |       |
| Turbine Speed             | 12460 RPM |                            |                 |                 |       |
| Air Manifold Pressure     | 36.9 "Hg  |                            |                 |                 |       |

!E2A :PCYLLAVG TEMP.

"clearSDs Eng Temp StaYardA StaYardB Sta Mode SetPoint Eng Menu MainMenu

6.0009E+02 DEG-F HIALEM C

10-14-89

| STATION 02                       |                   |             |       |                       |       |                     |         |      |     | ALM 3 13:47:32   |     |      |
|----------------------------------|-------------------|-------------|-------|-----------------------|-------|---------------------|---------|------|-----|------------------|-----|------|
| ENGINE 02 TEMPERATURE ( F ) DATA |                   |             |       |                       |       |                     |         |      |     | TIOGA STORAGE    |     |      |
| POWER CYLINDERS                  |                   | FUEL VALVES |       | COMPRESSOR DISCHARGES |       | Temperature Control |         | Fans |     |                  |     |      |
| CYLINDER                         | HEADS             | Left        | Right | Left                  | Right | Air Manifold        | 120     | 120  |     |                  |     |      |
| 1                                | 524               | 1           | 568   | 1                     | 86    | 1                   | 94      | 1    | 201 | After Water IN   | 118 | SP   |
| 2                                | 633               | 2           | 643   | 2                     | 87    | 2                   | 85      | 2    | 194 | After Water OUT  | 141 |      |
| 3                                | 592               | 3           | 584   | 3                     | 83    | 3                   | 85      | 3    | 194 | Difference       | -23 |      |
| 4                                | 586               | 4           | 657   | 4                     | 83    | 4                   | 87      | 4    | 193 | Fan #1 Control   | 20  | 100% |
| 5                                | 610               | 5           | 609   | 5                     | 88    | 5                   | 86      |      |     | Fan #2 Control   | 20  | BP   |
| AVERAGES                         |                   |             |       |                       |       |                     |         |      |     | Jacket Water IN  | 154 |      |
| L 609                            | R 612             |             |       | L 85                  | R 87  |                     | AVERAGE |      |     | Jacket Water OUT | 159 | 160  |
| OVERALL 610                      |                   |             |       |                       |       |                     |         |      |     | Difference       | -5  | SP   |
| OVERALL 86                       |                   |             |       |                       |       |                     |         |      |     | Fan #1 Control   | 39  | 100% |
| OVERALL 86                       |                   |             |       |                       |       |                     |         |      |     | Fan #2 Control   | 39  | BP   |
| Engine Oil IN 156                | PreTurbine EX 719 | Fuel        |       |                       |       |                     |         |      |     | Gas Dischrg IN   | 195 |      |
| Engine Oil OUT 168               | PostTurbine EX<<< | Supply      |       |                       |       |                     |         |      |     | Gas Dischrg OUT  | 108 | 100  |
| Turbo Lube Oil 164               | Exhaust Stack 34  | 68          |       |                       |       |                     |         |      |     | Difference       | 87  | SP   |
|                                  |                   |             |       |                       |       |                     |         |      |     | Fan #1 Control   | MAX |      |
|                                  |                   |             |       |                       |       |                     |         |      |     | Fan #2 Control   | MAX |      |

E2A : PCYLLAVG.TEMP.  
 Eng Oper Sta Misc StaYardA StaYardB Sta Mode SetPoint 6.0009E+22 DEG-F HIALEM C  
 Eng Menu MainMenu

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## STATION 02

ENGINE 02 OPERATION DATA  
GAS FLOW

Engine Running and Loaded

## ENGINE RUNNING STATUS

|                        |      |
|------------------------|------|
| Suction Header         | 1    |
| Suction Press          | 658  |
| Deschrge Header        | 2    |
| Deschrge Press         | 1612 |
| ---Pumping Capacity--- |      |
| Minimum(MMCFD)         | 60   |
| Maximum(MMCFD)         | 99   |
| -----Fuel Usage-----   |      |
| Pressure(PSI)          | 95   |
| Differ("H2O)           | 75   |
| Flowrate(MCFH)         | 32   |

## Control Load Step

AUTO

0

|                     |           |
|---------------------|-----------|
| Control             | AUTO      |
| Load Step           | 0         |
| Horsepower          | 4204 BHP  |
| Engine Speed:       |           |
| Actual              | 331 RPM   |
| Set Point           | 0 %       |
| Engine Torque:      |           |
| Actual              | 100 %     |
| Set Point           | 100 %     |
| TURBOCHARGER STATUS |           |
| Turbine Speed       | 12422 RPM |

Air Manifold Pressure 36.3 "Hg

ALM 3 13:14:58  
TIOGA STORAGE  
PRESSURES (PSI)

Engine Lube Oil 46

PreOil Filter 53

PreOil Strainer 52

Turbo Oil 23

Jacket Water 12

Fuel Manifold 36

MISCELLANEOUS  
IgnitionTiming 7

Exhaust Oxygen &lt;&lt;&lt; %

Turbo Bypass 37 %

E2A : PCYLLAVG TEMP.

earSDs Eng Temp StaYardA StaYardB Sta Mode SetPoint Eng Menu MainMenu

6.0009E+02 DEG-F HIALRM C

10 - 12 - 89

ALM 3 13:16:19

TIOGA STORAGE

## STATION 02

## ENGINE 02 TEMPERATURE ( F ) DATA

|          |       | POWER CYLINDERS |       | FUEL VALVES |       | COMPRESSOR DISCHARGES |    | Temperature  | Control | Fans                   |
|----------|-------|-----------------|-------|-------------|-------|-----------------------|----|--------------|---------|------------------------|
| CYLINDER | HEADS | Left            | Right | Left        | Right | 1                     | 2  | Air Manifold | 121     | 120                    |
| 1        | 324   | 1               | 572   | 1           | 87    | 1                     | 92 | 1            | 290     | After Water IN 119 SP  |
| 2        | 633   | 2               | 647   | 2           | 86    | 2                     | 86 | 2            | 193     | After Water OUT 141    |
| 3        | 595   | 3               | 589   | 3           | 83    | 3                     | 85 | 3            | 193     | Difference -22         |
| 4        | 588   | 4               | 655   | 4           | 85    | 4                     | 86 | 4            | 193     | Fan #1 Control 15 100% |
| 5        | 611   | 5               | 610   | 5           | 88    | 5                     | 87 |              |         | Fan #2 Control 15 BP   |

## AVERAGES

L 613 R 614

## AVEPAGES

L 85 R 87

## AVERAGE

194

OVERALL 612

OVERALL 86

|                  |         |
|------------------|---------|
| Jacket Water IN  | 154     |
| Jacket Water OUT | 160     |
| Difference       | -6 SP   |
| Fan #1 Control   | 45 100% |
| Fan #2 Control   | 45 BP   |

|                    |                   |        |                           |
|--------------------|-------------------|--------|---------------------------|
| Engine Oil IN 154  | PreTurbine EX 717 | Fuel   | Gas Dischrgre IN 196      |
| Engine Oil OUT 167 | PostTurbine EX<<< | Supply | Gas Dischrgre OUT 103 100 |
| Turbo Lube Oil 164 | Exhaust Stack 30  | 66     | Difference 83 SP          |

6.0209E+02 DEG-F HIALRM C  
SetPoint Eng Menu MainMenu

!E2A :PCYLLAVG TEMP.

ng Oper Sta Misc StaYardA StaYardB Sta Mode

C

F-77

10-12-87

ALM 3 13:15:39

TIOGA STORAGE

PRESSURES (PSI)

Engine Lube Oil 4"

STATION 02

ENGINE 02 OPERATION DATA  
GAS FLOW

Engine Running and Loaded

ENGINE RUNNING STATUS

Control AUTO

Load Step 0

Horsepower

4103 BHP

Engine Speed:

Actual

331 RPM

Set Point

0 %

Engine Torque:

Actual

100 %

Set Point

100 %

TURBOCHARGER STATUS

Turbine Speed 12406 RPM

Air Manifold Pressure 36.8 "Hg

Suction Header 1  
 Suction Press 659  
 Dschrge Header 2  
 Dschrge Press 1612  
 ---Pumping Capacity---  
 Minimum(MMCFD) 60  
 Maximum(MMCFD) 100  
 -----Fuel Usage-----  
 Pressure(PSI) 95  
 Differ(H2O) 79  
 Flowrate(MCFH) 33

PreOil Filter 53

PreOil Strainer 52

Turbo Oil 20

Jacket Water 12

Fuel Manifold 36

## MISCELLANEOUS

IgnitionTiming ?

Exhaust Oxygen: &lt; &lt; %

Turbo Bypass 37 %

E2A : PCYLLAVG TEMP.

clearSDs Eng Temp StaYardA StaYardB Sta Mode SetPoint 6.0009E+02 DEG-F HIALRM C

Eng Menu MainMenu

E-78

10 - 12. - 89  
ALM 3 13:16:59

| STATION 02         |                 |             |                             |        |            |       |                |     |                          | TIOGA STORAGE  |     |     |      |
|--------------------|-----------------|-------------|-----------------------------|--------|------------|-------|----------------|-----|--------------------------|----------------|-----|-----|------|
| CYLINDER           | POWER CYLINDERS |             | ENGINE C2 TEMPERATURE ( F ) |        | COMPRESSOR |       | DATA           |     | Temperature Control Fans | Air Manifold   | IN  | 121 | 126  |
|                    | Left            | Heads       | FUEL                        | VALVES | Left       | Right | DISCHARGES     |     |                          |                |     |     |      |
| 1                  | 624             | 1           | 569                         | 1      | 87         | 1     | 94             | 1   | 200                      | After Water    | IN  | 119 | SP   |
| 2                  | 633             | 2           | 647                         | 2      | 86         | 2     | 86             | 2   | 193                      | After Water    | OUT | 141 |      |
| 3                  | 593             | 3           | 592                         | 3      | 83         | 3     | 85             | 3   | 193                      | Difference     |     | -22 |      |
| 4                  | 588             | 4           | 657                         | 4      | 85         | 4     | 86             | 4   | 193                      | Fan #1 Control |     | 15  | 120% |
| 5                  | 610             | 5           | 609                         | 5      | 88         | 5     | 87             |     |                          | Fan #2 Control |     | 15  | BP   |
| <b>AVERAGES</b>    |                 |             |                             |        |            |       |                |     |                          | Jacket Water   | IN  | 154 |      |
| L 609              |                 | F 614       |                             | L 85   | R 87       |       | AVERAGE        | 194 |                          | Jacket Water   | OUT | 161 | 160  |
| <b>OVERALL</b> 611 |                 |             |                             |        |            |       |                |     |                          | Difference     |     | -7  | SP   |
|                    |                 |             |                             |        |            |       |                |     |                          | Fan #1 Control |     | 46  | 120% |
|                    |                 |             |                             |        |            |       |                |     |                          | Fan #2 Control |     | 46  | BP   |
| Engine Oil IN      | 154             | PreTurbine  | EX 717                      | Fuel   |            |       | Gas Dischrg    | IN  | 136                      |                |     |     |      |
| Engine Oil OUT     | 167             | PostTurbine | EX 664                      | Supply |            |       | Gas Dischrg    | OUT | 167                      | 120            |     |     |      |
| Turbo Lube Oil     | 165             | Exhaust     | Stack                       | 30     | 68         |       | Difference     |     | 39                       | SP             |     |     |      |
|                    |                 |             |                             |        |            |       | Fan #1 Control |     | MAX                      |                |     |     |      |
|                    |                 |             |                             |        |            |       | Fan #2 Control |     | MAX                      |                |     |     |      |

EPA : PCYLLAVG.TEMP.  
Eng Oper Sta Misc StaYardA StaYardB Sta Mode SetPoint Eng Menu MainMenu

6.30000E+32 DEG-F HIALRM C

P-79

$$10 = 13 - 89$$

# ALPINE FLOWERS

## THE MOUNTAINS OF SWITZERLAND

### The Clinical Laboratory

#### REFERENCES AND NOTES

Journal of Health Politics, Policy and Law

1. Definition of  $\mathcal{A}(\mathcal{B}_m)$  and  $\mathcal{A}(\mathcal{B}_{m+1})$

卷之三十一

### **REFERENCES**

<sup>1</sup> See also the discussion of the relationship between the two in the introduction.

卷之三

E-80

10 - 12 - 89

FIGURE 10. TRAVERSAL OF THE THERMOCOUPLES.

卷之三

POWER CHAMBERS COMPRESSOR Temperature Control Pipe

| POWER CYLINDERS |             | COMPRESSOR |              | Temperature Control Pipe |                        |
|-----------------|-------------|------------|--------------|--------------------------|------------------------|
| CHARGE HEADS    | FUEL VALVES | DISCHARGES | AIR MANIFOLD | AFTER WATER              | 118-103                |
| Right           | Left        | Right      | After Water  | 118-117                  | 33                     |
| 1               | 1           | 538        | 1            | 238                      | After Water 637 142    |
| 2               | 2           | 544        | 2            | 193                      | Difference -33         |
| 3               | 3           | 539        | 3            | 193                      | Fan #1 Control 118-103 |
| 4               | 4           | 531        | 4            | 192                      | Fan #2 Control 10 55   |
|                 |             | 532        |              |                          |                        |

| AVERAGES   | AVERAGES   | AVERAGE | Jacket Water IN  | 15.     |
|------------|------------|---------|------------------|---------|
| D-107      | D-112      | D-105   | Jacket Water OUT | 15.8    |
| OVERALL 58 | OVERALL 58 | 154     | Difference       | .47 SP  |
|            |            |         | Fan #1 Control   | 78.100% |
|            |            |         | Fan #2 Control   | 79.06%  |

|             |         |           |        |        |               |     |     |
|-------------|---------|-----------|--------|--------|---------------|-----|-----|
| Engine Oil  | 10-154  | Preflame  | EA-718 | Fuel   | Gas Discharge | 14  | 195 |
| Exhaust Oil | CBT-102 | Postflame | EA-718 | Supply | Difference    | 105 | 180 |
| Exhaust Gas | Oil-104 | Exhaust   | EA-718 | -      | Fan & Control | 105 |     |
|             |         | Flow      | EA-718 | -      | Fan & Control | 105 |     |

1114-111149, TSP, 5.6709E+02 DEG-F 114.5M 0  
e Bier Its Mact Stafford Standard Sta Moda SetPoint Eng Menu Mainmenu

F-81

10-12-89

ALM 3 12:49:14

TIOGA STORAGE

## PRESSURES (PSI)

Engine Lube Oil 46

PreOil Filter 53

PreOil Strainer 52

Turbo Oil 20

Jacket Water 12

Fuel Manifold 36

## MISCELLANEOUS

IgnitionTiming 7

Exhaust Oxygen &lt;&lt;&lt; %

Turbo Bypass 42 %

STATION 02

ENGINE 02 OPERATION DATA  
GAS FLOW

Engine Running and Loaded

## ENGINE RUNNING STATUS

|                        |      |
|------------------------|------|
| Suction Header         | 1    |
| Suction Press          | 656  |
| Dschrg Header          | 2    |
| Dschrg Press           | 1612 |
| ---Pumping Capacity--- |      |
| Minimum(MMCFD)         | 60   |
| Maximum(MMCFD)         | 100  |
| -----Fuel Usage-----   |      |
| Pressure(PSI)          | 95   |
| Differ("H2O)           | 77   |
| Flowrate(MCFH)         | 33   |

|                     |           |
|---------------------|-----------|
| Control             | AUTO      |
| Load Step           | 0         |
| Horsepower          | 4236 BHP  |
| Engine Speed:       |           |
| Actual              | 3300 RPM  |
| Set Point           | 0 %       |
| Engine Torque:      |           |
| Actual              | 99 %      |
| Set Point           | 100 %     |
| TURBOCHARGER STATUS |           |
| Turbine Speed       | 12395 RPM |

Air Manifold Pressure 36.7 Hg

E2A : PCYLLAVG.TEMP.

|           |          |          |          |          |          |                  |          |
|-----------|----------|----------|----------|----------|----------|------------------|----------|
| 'clearSDs | Eng Temp | StaYardA | StaYardB | Sta Mode | SetPoint | 6.0009E+02 DEG-F | HIALRM C |
|           |          |          |          |          |          | Eng Menu         | MainMenu |

/O - /Z - 89

STATION C2

## ENGINE #2 TEMPERATURE ( F ) DATA

ALM 3 12:47:37  
TIOGA STORAGE

| CYLINDER | POWER CYLINDERS |       | FUEL VALVES |       | COMPRESSOR DISCHARGES |     | Temperature Control Fans |                        |
|----------|-----------------|-------|-------------|-------|-----------------------|-----|--------------------------|------------------------|
|          | Left            | Right | Left        | Right | 1                     | 200 |                          |                        |
| 1        | 522             | 1     | 570         | 1     | 87                    | 1   | 92                       | Air Manifold 121 120   |
| 2        | 631             | 2     | 644         | 2     | 86                    | 2   | 86                       | After Water IN 119 SP  |
| 3        | 592             | 3     | 592         | 3     | 82                    | 3   | 85                       | After Water OUT 139    |
| 4        | 585             | 4     | 655         | 4     | 85                    | 4   | 85                       | Difference -26         |
| 5        | 609             | 5     | 607         | 5     | 87                    | 5   | 86                       | Fan #1 Control 15 100% |
|          |                 |       |             |       |                       |     |                          | Fan #2 Control 15 BP   |

## AVERAGES

L 607 R 613

OVERALL 610

## AVERAGES

L 85 R 86

OVERALL 85

## AVERAGE

194

|                  |     |      |  |
|------------------|-----|------|--|
| Jacket Water IN  | 152 |      |  |
| Jacket Water OUT | 158 | 160  |  |
| Difference       | -6  | SP   |  |
| Fan #1 Control   | 37  | 100% |  |
| Fan #2 Control   | 37  | BP   |  |

Engine Oil IN 152 PreTurbine EX 715 Fuel  
Engine Oil OUT 166 PostTurbine EX<<< Supply  
Turbo Lube Oil 163 Exhaust Stack 29 68

|                   |     |     |  |
|-------------------|-----|-----|--|
| Gas Dischrgre IN  | 196 |     |  |
| Gas Dischrgre OUT | 107 | 100 |  |
| Difference        | 89  | SP  |  |
| Fan #1 Control    | MAX |     |  |
| Fan #2 Control    | MAX |     |  |

E2A : PCYLLAVG.TEMP.

ng Oper Sta Misc StaYardA StaYardB Sta Mode 6.0009E+02 DEG-F HIALRM C  
SetPoint Eng Menu MainMenu

F-83

10-12-89

ADM 3 100110

10000 5/25/89

PRESSURES (psi)

Engine Lube Oil 100

Fretill Filter 31

Fretill Strainer 32

Turbo Oil 12

Bottom Water 11

Fuel Manifold 32

INTERCOOLER INLET

INTERCOOLER OUTLET

Exhaust Oxygen 12

Exhaust Pressure 100

CHARTS & PICTURES

ENGINE & FUEL

Standard SteadyR SteadyR SteadyR

Steering Mode SelectPnt

CHARTS & PICTURES

Standard SteadyR

Steering Mode SelectPnt

TABLE OF

1000000000 OPERATION DATA

GAS FLUID

Engine Running and Load

ENGINE RUNNING DATA

|                       |           |
|-----------------------|-----------|
| Conc.                 | 40%       |
| Step                  | 0         |
| Deceleration          | 4.296 MPH |
| Engine Speed:         |           |
| Actual                | 1000 RPM  |
| Set Point             | 0 %       |
| Engine Torque:        |           |
| Actual                | 98 N      |
| Set Point             | 100 N     |
| THROTTLE POSITION (%) |           |
| Position %            | 124.44 %  |

THE FOLLOWING FREQUENCIES ARE USED

|                        |      |
|------------------------|------|
| Suction Header         | 3    |
| Suction Press          | 656  |
| Discharge Header       | 2    |
| Discharge Press        | 1615 |
| ---Flowing Capacity--- |      |
| Minimum(MCFD)          | 61   |
| Maximum(MCFD)          | 102  |
| ---Fuel Inlet---       |      |
| Pressure(PSI)          | 94   |
| Differ.(H20)           | 73   |
| Fracrate(MCFH)         | 323  |

CHARTS & PICTURES

CHARTS & PICTURES

CHARTS & PICTURES





F-86

10-12-89

CONTINUATION

## ENGINE 012 TEMPERATURE ( F ) DATA

FLM 3 12-12-89

| CYLINDER HEADS |      | FUEL VALVES |       | COMPRESSOR DISCHARGES |       |    |   |     |
|----------------|------|-------------|-------|-----------------------|-------|----|---|-----|
| CYL            | HEAD | Left        | Right | Left                  | Right |    |   |     |
| 1              | 1    | 562         | 1     | 37                    | 2     | 92 | 1 | 201 |
| 2              | 2    | 537         | 2     | 36                    | 2     | 88 | 2 | 193 |
| 3              | 3    | 560         | 3     | 33                    | 3     | 85 | 3 | 193 |
| 4              | 4    | 560         | 4     | 36                    | 4     | 86 | 4 | 193 |
| 5              | 5    | 501         | 5     | 37                    | 5     | 88 |   |     |

AVERAGES

L = 500 R = 505  
C = 500 R = 503

| AVERAGES |     | AVERAGE |
|----------|-----|---------|
| L        | R   | C       |
| 500      | 505 | 503     |

Engine 012 10-12-89  
Engine 012 10-12-89  
Engine 012 10-12-89Propane EX 769 Fuel  
Propane EX 769 Supply  
Propane EX 769TUBE SURFACE  
Temperature Control Fans

|                  |     |     |
|------------------|-----|-----|
| Air tank cold    | 100 | 123 |
| After burner IN  | 117 | 158 |
| After burner OUT | 107 |     |
| Difference       | -10 |     |
| Fan #1 Control   | 10  | 106 |
| Fan #2 Control   | 10  | 158 |

|                  |     |
|------------------|-----|
| Jacket Meter IN  | 100 |
| Jacket Meter OUT | 132 |
| Difference       | 32  |
| Fan #1 Control   | 10  |
| Fan #2 Control   | 10  |

|                |     |
|----------------|-----|
| Gas Meter IN   | 100 |
| Gas Meter OUT  | 113 |
| Difference     | 13  |
| Fan #1 Control | 10  |
| Fan #2 Control | 10  |

6.000000E+0000 11.000000E+0000  
Setpoint Long Run Maximum

C

# THEORY AND PRACTICE IN TEACHING ENGLISH AS A FOREIGN LANGUAGE

新嘉坡中華書局印行  
新嘉坡中華書局總經理

1. The following table summarizes the results of the study.

#### **REFERENCES**

在於此，我們可以說，這就是所謂「社會主義」的「社會主義」。

THE UNIVERSITY OF TORONTO LIBRARIES  
1970

19. *U.S. Fish and Wildlife Service, Biological Report 82(12): 1-10.*

### REFERENCES AND NOTES

1. *What is the relationship between the two terms?*

## BRITISH ASSOCIATION FOR THE HISTORY OF SCIENCE

| NAME   | TYPE   | PERCENTAGE |         | TESTS |
|--------|--------|------------|---------|-------|
|        |        | NO.        | PERCENT |       |
| WILSON | WILSON | 1          | 100     | 1     |
| WILSON | WILSON | 2          | 100     | 1     |
| WILSON | WILSON | 3          | 100     | 1     |
| WILSON | WILSON | 4          | 100     | 1     |
| WILSON | WILSON | 5          | 100     | 1     |
| WILSON | WILSON | 6          | 100     | 1     |
| WILSON | WILSON | 7          | 100     | 1     |
| WILSON | WILSON | 8          | 100     | 1     |
| WILSON | WILSON | 9          | 100     | 1     |
| WILSON | WILSON | 10         | 100     | 1     |
| WILSON | WILSON | 11         | 100     | 1     |
| WILSON | WILSON | 12         | 100     | 1     |
| WILSON | WILSON | 13         | 100     | 1     |
| WILSON | WILSON | 14         | 100     | 1     |
| WILSON | WILSON | 15         | 100     | 1     |
| WILSON | WILSON | 16         | 100     | 1     |
| WILSON | WILSON | 17         | 100     | 1     |
| WILSON | WILSON | 18         | 100     | 1     |
| WILSON | WILSON | 19         | 100     | 1     |
| WILSON | WILSON | 20         | 100     | 1     |
| WILSON | WILSON | 21         | 100     | 1     |
| WILSON | WILSON | 22         | 100     | 1     |
| WILSON | WILSON | 23         | 100     | 1     |
| WILSON | WILSON | 24         | 100     | 1     |
| WILSON | WILSON | 25         | 100     | 1     |
| WILSON | WILSON | 26         | 100     | 1     |
| WILSON | WILSON | 27         | 100     | 1     |
| WILSON | WILSON | 28         | 100     | 1     |
| WILSON | WILSON | 29         | 100     | 1     |
| WILSON | WILSON | 30         | 100     | 1     |
| WILSON | WILSON | 31         | 100     | 1     |
| WILSON | WILSON | 32         | 100     | 1     |
| WILSON | WILSON | 33         | 100     | 1     |
| WILSON | WILSON | 34         | 100     | 1     |
| WILSON | WILSON | 35         | 100     | 1     |
| WILSON | WILSON | 36         | 100     | 1     |
| WILSON | WILSON | 37         | 100     | 1     |
| WILSON | WILSON | 38         | 100     | 1     |
| WILSON | WILSON | 39         | 100     | 1     |
| WILSON | WILSON | 40         | 100     | 1     |
| WILSON | WILSON | 41         | 100     | 1     |
| WILSON | WILSON | 42         | 100     | 1     |
| WILSON | WILSON | 43         | 100     | 1     |
| WILSON | WILSON | 44         | 100     | 1     |
| WILSON | WILSON | 45         | 100     | 1     |
| WILSON | WILSON | 46         | 100     | 1     |
| WILSON | WILSON | 47         | 100     | 1     |
| WILSON | WILSON | 48         | 100     | 1     |
| WILSON | WILSON | 49         | 100     | 1     |
| WILSON | WILSON | 50         | 100     | 1     |
| WILSON | WILSON | 51         | 100     | 1     |
| WILSON | WILSON | 52         | 100     | 1     |
| WILSON | WILSON | 53         | 100     | 1     |
| WILSON | WILSON | 54         | 100     | 1     |
| WILSON | WILSON | 55         | 100     | 1     |
| WILSON | WILSON | 56         | 100     | 1     |
| WILSON | WILSON | 57         | 100     | 1     |
| WILSON | WILSON | 58         | 100     | 1     |
| WILSON | WILSON | 59         | 100     | 1     |
| WILSON | WILSON | 60         | 100     | 1     |
| WILSON | WILSON | 61         | 100     | 1     |
| WILSON | WILSON | 62         | 100     | 1     |
| WILSON | WILSON | 63         | 100     | 1     |
| WILSON | WILSON | 64         | 100     | 1     |
| WILSON | WILSON | 65         | 100     | 1     |
| WILSON | WILSON | 66         | 100     | 1     |
| WILSON | WILSON | 67         | 100     | 1     |
| WILSON | WILSON | 68         | 100     | 1     |
| WILSON | WILSON | 69         | 100     | 1     |
| WILSON | WILSON | 70         | 100     | 1     |
| WILSON | WILSON | 71         | 100     | 1     |
| WILSON | WILSON | 72         | 100     | 1     |
| WILSON | WILSON | 73         | 100     | 1     |
| WILSON | WILSON | 74         | 100     | 1     |
| WILSON | WILSON | 75         | 100     | 1     |
| WILSON | WILSON | 76         | 100     | 1     |
| WILSON | WILSON | 77         | 100     | 1     |
| WILSON | WILSON | 78         | 100     | 1     |
| WILSON | WILSON | 79         | 100     | 1     |
| WILSON | WILSON | 80         | 100     | 1     |
| WILSON | WILSON | 81         | 100     | 1     |
| WILSON | WILSON | 82         | 100     | 1     |
| WILSON | WILSON | 83         | 100     | 1     |
| WILSON | WILSON | 84         | 100     | 1     |
| WILSON | WILSON | 85         | 100     | 1     |
| WILSON | WILSON | 86         | 100     | 1     |
| WILSON | WILSON | 87         | 100     | 1     |
| WILSON | WILSON | 88         | 100     | 1     |
| WILSON | WILSON | 89         | 100     | 1     |
| WILSON | WILSON | 90         | 100     | 1     |
| WILSON | WILSON | 91         | 100     | 1     |
| WILSON | WILSON | 92         | 100     | 1     |
| WILSON | WILSON | 93         | 100     | 1     |
| WILSON | WILSON | 94         | 100     | 1     |
| WILSON | WILSON | 95         | 100     | 1     |
| WILSON | WILSON | 96         | 100     | 1     |
| WILSON | WILSON | 97         | 100     | 1     |
| WILSON | WILSON | 98         | 100     | 1     |
| WILSON | WILSON | 99         | 100     | 1     |
| WILSON | WILSON | 100        | 100     | 1     |

19. *Leucosia* *leucostoma* (Fabricius) *leucostoma* (Fabricius) *leucostoma* (Fabricius)

| Period | Mean | SD   | Min  | Max  |
|--------|------|------|------|------|
| 1      | 1.00 | 0.00 | 1.00 | 1.00 |
| 2      | 1.00 | 0.00 | 1.00 | 1.00 |
| 3      | 1.00 | 0.00 | 1.00 | 1.00 |
| 4      | 1.00 | 0.00 | 1.00 | 1.00 |
| 5      | 1.00 | 0.00 | 1.00 | 1.00 |
| 6      | 1.00 | 0.00 | 1.00 | 1.00 |
| 7      | 1.00 | 0.00 | 1.00 | 1.00 |
| 8      | 1.00 | 0.00 | 1.00 | 1.00 |
| 9      | 1.00 | 0.00 | 1.00 | 1.00 |
| 10     | 1.00 | 0.00 | 1.00 | 1.00 |
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| 99     | 1.00 | 0.00 | 1.00 | 1.00 |
| 100    | 1.00 | 0.00 | 1.00 | 1.00 |

在這裏，我們可以說，我們的問題是：「誰是上帝？」

For more information about the National Institute of Child Health and Human Development, please call the NICHD Information Resource Center at 301-435-2936 or visit the NICHD Web site at [www.nichd.nih.gov](http://www.nichd.nih.gov).

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（三）在本行的“存入”栏内，填写存入金额，即存入款额。

Chlorophyll a fluorescence

Every day is a new opportunity to learn.

#### Final sentence: *the* — *city*

Figure 1. The relationship between the number of species and the area of forest.

<sup>1</sup> See also the discussion in the previous section.

Figure 1. The effect of the number of nodes on the performance of the proposed algorithm.

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THE END

Table 1. Summary of the results of the study of the effect of the presence of the *luteinizing hormone receptor* gene on the expression of the *luteinizing hormone receptor* gene.

2010-11 年度第 1 季度第 1 次定期評議會

| Category               | Definition   | Example  |
|------------------------|--|--|
| 1. Direct              | Explicitly stated or clearly indicated.  | The book is red.                               |
| 2. Indirect            | Implied or suggested through context or implication.   | The book is red, but it's not mentioned.       |
| 3. Figurative Language | Language that uses words in a non-literal way to convey meaning.   | A rose by any other name would smell as sweet. |
| 4. Metaphor            | A figure of speech where one thing is described as if it were another.                                       | Time is a thief.                               |
| 5. Simile              | A figure of speech comparing two things using like or as.  | She is as fast as a cheetah.                   |
| 6. Personification     | Attributing human characteristics to non-human entities.   | The wind whispered secrets to the leaves.      |
| 7. Irony               | A statement that contradicts its own meaning or expectation.   | I'm so hungry I could eat a horse.             |
| 8. Hyperbole           | An extreme exaggeration for emphasis.  | I'm so tired I could sleep for a week.         |
| 9. Metonymy            | A figure of speech where a word or phrase is used to represent something else it is closely associated with. | He's got a mouthful of words to say.           |
| 10. Synecdoche         | A figure of speech where a part of something is used to represent the whole.                                 | All hands on deck!                             |

10. *Journal of Clinical Endocrinology* 1993; 132: 1103-1108.

THE JOURNAL OF CLIMATE

For more information about the study, contact Dr. Michael J. Hwang at (319) 356-4000 or email at [mhwang@uiowa.edu](mailto:mhwang@uiowa.edu).

在這裏，我們可以說，這就是「中國化」的「新儒學」。

10. *Urtica dioica* L.

#### REFERENCES AND NOTES

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